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Performance Evaluation of the Existing Three-Lagoon Wastewater Treatment Plant at Pawnee, Illinois

Gurnham and Associates, Inc, Chicago, IL

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Performance Evaluation of the Existing Three-Lagoon Wastewater Treatment Plant at Pawnee, Illinois

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by

C. Fred Gurnham
B. A. Rose
W. T. Fetherston
Gurnham and Associates, Inc.
Chicago, Illinois 60606

Grant No. R-803900

Project Officer

Ronald F. Lewis
Wastewater Research Division
Municipal Environmental Research Laboratory
Cincinnati, Ohio 45268

MUNICIPAL ENVIRONMENTAL RESEARCH LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY
CINCINNATI, OHIO 45268

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FOREWORD

The Environmental Protection Agency was created because of increasing public and government concern about the dangers of pollution to the health and welfare of the American people. The complexity of the environment and the interplay between its components require a concentrated and integrated attack on the problem.

Research and development is that necessary first step in problem solution and it involves defining the problem, measuring its impact, and searching for solutions. The Municipal Environmental Research Laboratory develops new and improved technology and systems for the prevention, treatment, and management of wastewater and solid and hazardous waste pollutant discharges from municipal and community sources, for the preservation and treatment of public drinking water supplies, and to minimize the adverse economic, social, health, and aesthetic effects of pollution. This publication is one of the products of that research; a most vital communications link between the researcher and the user community.

As part of these activities, this case history report was prepared to make available to the sanitary engineering community a full year of operating and measured performance data for a three-cell facultative wastewater treatment lagoon system.

Francis T. Mayo
Director
Municipal Environmental Research
Laboratory

ABSTRACT

Wastewater treatment lagoons have found extensive use, particularly in small communities. However, few operational data are currently available as a basis for evaluating the performance capabilities of lagoons. This report presents data gathered over a one-year period of monitoring the lagoon system at Pawnee, Illinois, and compares treatment plant performance to design loading rates and the Federal secondary treatment standards. The treatment plant performed very well. Removals of BOD_5 and fecal coliforms were excellent. During the early part of the year, lagoon effluent passed through a sand filter, which was ineffective and contributed suspended solids to the effluent; the filters were later by-passed and suspended solids removal was satisfactory from then on. Fecal coliform removal was satisfactory except for a brief period when chlorine addition was insufficient. In addition to the above parameters, many others were monitored and are presented both in summary form and in complete listings of all data collected during the study. The lagoons performed satisfactorily during the winter months, and anaerobic conditions did not develop despite a thick ice layer.

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The Village of Pawnee retained Gurnham and Associates, Inc., to conduct the performance evaluation of its wastewater treatment plant. The success of the project was made possible through the efforts of Mayor Edgar Dickey; Village Manager Roger Alexander; and Wastewater Treatment Plant Operator James Clauser.

SECTION I

INTRODUCTION

The Federal Water Pollution Control Act Amendments of 1972, PL 92-500, established minimum performance requirements for publicly owned treatment works. By July 1977, publicly owned treatment works were required to meet effluent limitations based on secondary treatment as defined by 40 CFR Part 133. Originally published on August 17, 1973 and amended June 26, 1976, (41 FR 30785; July 26, 1976), these regulations state: (a) The five-day biochemical oxygen demand (BOD_5) and suspended solids (SS) shall not exceed an arithmetic mean value of 30 mg/l for effluent samples collected in a period of 30 consecutive days, and (b) the arithmetic mean of the effluent BOD_5 and SS values determined on samples collected in a period of 30 consecutive days shall not exceed 15 percent of the arithmetic mean of the BOD_5 and SS values determined on influent samples collected at approximately the same times during the same period (85% removal). Limitations of fecal coliform bacteria were deleted in the 1976 revision of the standard. It is now felt that it is environmentally sound to establish disinfection requirements for domestic wastewater discharges in accordance with water quality standards promulgated pursuant to Sections 302 and 303 of the Act and associated public health needs. On September 28, 1977, suspended solids limitations were amended to permit less stringent limitations for wastewater treatment ponds with a design capacity of two million gallons per day or less. Either the Regional Administrator or the State Director may establish less stringent limitations, subject to EPA approval, based on the actual performance of waste stabilization ponds in the geographic areas which are meeting effluent quality limitations for biochemical oxygen demand.

There are more than 4,000 publicly owned waste treatment lagoons in the United States. These lagoons are generally located in small rural communities and designed for a flow of less than 3,785 m^3/day [one million gallons per day (1 mgd)]. Lagoons are widely used because operation and maintenance are simple, operating costs are low, and land is generally available in rural areas. There is wide variation in the design of these lagoon systems, in part to take advantage of existing topography. Long term performance data are usually lacking, particularly for continuous-discharge aerated lagoons. Typically, there is no formal test program at these lagoons or, at most, infrequent grab sampling. An EPA Task Force Committee, while preparing a bulletin on design criteria for use by Regional Administrators in reviewing construction grant applications under PL 92-500, found very little evidence of evaluation of existing lagoon performance in relation to design. Review of those data that are available indicated that multiple-cell lagoons (with series or parallel-series operation) are more effective than a single-cell large lagoon; and that effluent quality, particularly for facultative or photo-synthetic lagoons, is caused to deteriorate by large amounts of algae in lagoon effluents during summer periods, and by low temperatures and anaerobic conditions resulting from icing-over of lagoons in winter. There is a strong possibility that continuous-discharge facultative lagoons will not meet the secondary treatment requirements without supplemental treatment.

It is believed that the problems associated with algae carryover in the summer and with winter icing can be effectively mitigated by the addition of a mechanical oxygen (air) supply to some or all of the cells of a multi-cell lagoon system. It is important to determine how effectively aerated and aerated/facultative waste treatment lagoons operate throughout all seasons of the year. Documentation and evaluation of carefully collected operating and performance data will provide evidence as to whether existing continuous-discharge aerated lagoons, serving as a secondary treatment system, can, as presently designed and operated, meet the 1977 Standards. They will also aid in pinpointing what improvements and upgrading may be needed in the design and operation of aerated lagoons, and will thus define future research needs.

This one-year performance study of the existing aerated lagoon system at Pawnee, Illinois, was a part of a program funded by the U.S. Environmental Protection Agency (EPA) to evaluate continuous-discharge, multi-cell aerated lagoon systems in different climates and geographical locations.

SECTION II

CONCLUSIONS

Aerated lagoons appear to offer a relatively inexpensive method of treating domestic wastewater from small population centers. Well-designed and operated systems are capable of meeting Federal Standards for secondary treatment. This report presents performance data on the aerated lagoon system operated by the Village of Pawnee, Illinois.

1. Removal of BOD_5 was excellent over the study period. Removal averaged 99%. The lagoons were covered with ice for at least one month; however, air was continuously supplied to the system. Although the BOD_5 removal dropped to 96.8% following the freeze, anaerobic conditions did not develop. BOD_5 loading exceeded design capacity during five of the project months. Although the system was organically overloaded, flows were consistently measured at less than 50% of design capacity. It was not possible to determine if the efficiency of the Pawnee system will be maintained when it reaches its hydraulic design capacity.

2. Suspended solids removal over the 3-cell system averaged 94%. Flow from the lagoons passed through sand filters the first three months of the study, during which time TSS removal between the head of the plant and the final discharge point averaged 89.3%. The filters were by-passed in June. Total suspended solids removal over the plant averaged 96.7% during the period the filters were by-passed, indicating redundancy in the application of the sand filters. The Pawnee system meets Federal Standards without the filters. The need for final polishing after an aerated lagoon system is related to State or Local water quality-based standards.

3. The Pawnee system meets State of Illinois standards for destruction of fecal coliforms.

4. Nutrient removal efficiencies within the Pawnee system are less consistent than for BOD_5 and suspended solids, and appear to be more directly related to climate. Phosphorus removal averaged 70.8%. Reduction of total Kjeldahl nitrogen was calculated at 89.7%, while the year-round average for removal of ammonia nitrogen was 93.9%.

SECTION III

RECOMMENDATIONS

In general, the Pawnee wastewater treatment system functions efficiently. It consistently meets Federal standards for secondary treatment. The flow through the system averaged 787 m^3/day (208,000 gpd), or 42% of design capacity; organic loading, however, exceeded design capacity during five of the project months. The BOD_5 concentration of the lagoon influent greatly exceeded that which is generally considered standard for domestic wastewaters. Continued monitoring of the organic loading in the system is recommended.

The sand filters in the Pawnee system are redundant and should be removed as quickly as possible. The need for a substitute method of final polishing is dependent on any further requirements imposed on wastewater treatment plants by the State.

Efforts should be made to protect the lagoons from damage caused by muskrats tunneling through lagoon berms.

SECTION IV

DESCRIPTION OF PAWNEE TREATMENT SYSTEM

The site for this project is the Village of Pawnee, in Sangamon County, Illinois. Pawnee is located approximately 24 kilometers (15 miles) south of Springfield, the State capital. Climate in the central part of the state is continental, with warm summers and cold winters. The State lies within the principal storm tracks that cross the country and as a consequence experiences marked weather changes, especially in winter. Mean average temperature for the area is 10°C (51°F), ranging from a January mean average of -3°C (26°F) to 24°C (75°F) in July. Average daily minimum temperatures range from -8°C (18°F) to 18°C (64°F); average daily maximums range from 1°C (34°F) to 30°C (85°F). Total precipitation averages 914 mm (36 inches); the snowfall average is 559 mm (22 inches). The period of heaviest precipitation occurs between March and September. Prevailing winds are from the south, and average 11 kph (7 mph) with gusts to 110 kph (70 mph).

The Village of Pawnee Trustees issued $800,000 of revenue bonds in 1972 to build a modern sewage collection system. The money raised was used to construct 83,000 linear feet of sewers, four lift stations, and an Air-Aqua tertiary lagoon wastewater treatment system. The population of Pawnee is approximately 2,500 (population was 1,936 in 1970 census), with about 90% connected to the sewer system. The wastewater treatment plant is located north of the Village Center, and discharges to Horse Creek, a tributary of the south fork of the Sangamon River, in the Illinois river system.

A lagoon system such as was installed at Pawnee is estimated(1) to cost one-quarter as much as a comparable activated sludge waste treatment plant, and operation costs(2) are also reported lower. Another advantage to a lagoon system for a small community is that there is no need for solids handling equipment which adds to the cost of a secondary treatment plant.

The wastewater treatment plant (See Figure 1) has a design capacity of 1,893 m^3/day (0.5 mgd) to accomodate domestic waste generated by a population of 5,000, with a BOD_5 design loading of 386 kd/day (850 lb/day) at an average of 200 mg BOD_5/l influent. It includes three lagoons, in series, each equipped

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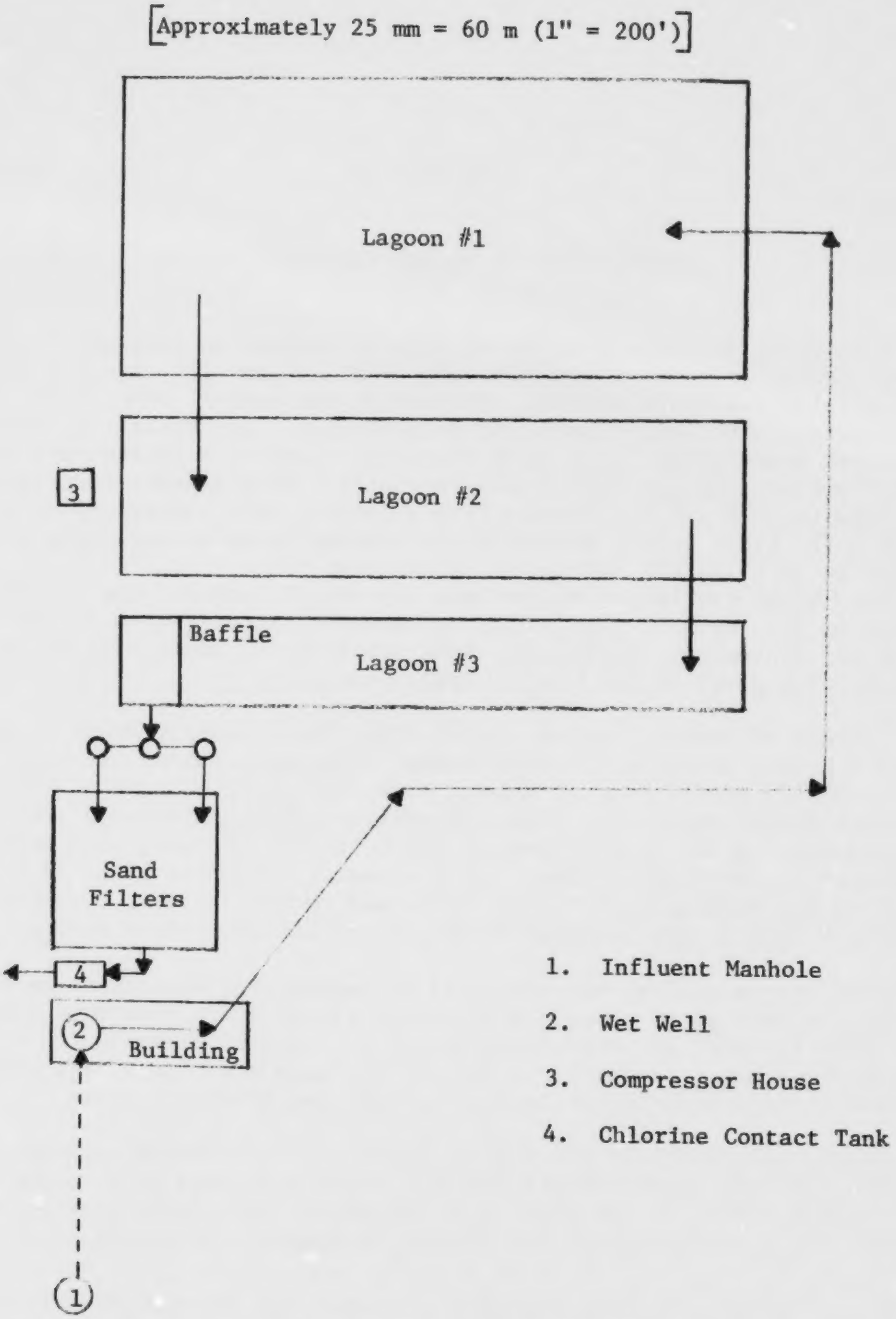
(1) Smith & Eilers "Cost to Consumer of Collecting and Treating Wastewater in the U.S." USDI, FWQA, July 1970.

(2) Michel "Costs and Manpower for Wastewater Treatment Plant O&M, 1965-1968 JWPCF 40, 11, 1883, November 1970.


Lagoon #1
Lagoon #2
3
Baffle
Lagoon #3
Sand Filters
4
2
Building
1

[Approximately 25 mm = 60 m (1" = 200')]

1. Influent Manhole
2. Wet Well
3. Compressor House
4. Chlorine Contact Tank

Figure 1. Pawnee sewage treatment plant.

with an "Air-Aqua" aeration system (Hinde Engineering Company), followed by sand filters and chlorination. The Air-Aqua system provides diffused air aeration from special tubes laid on the bottom of the lagoons. Transverse layout of the aeration tubes is said to provide convenient and efficient air flow from headers. The layout is also claimed to compartmentalize flow which is divided by air bubble "curtains". It is further claimed that this minimizes short-circuiting, extends the aeration time, and provides aeration of the entire lagoon volume. Spacing of the tubes is designed to provide aeration approximately in proportion to the demand (See Figure 2).

Lagoon #1 is 110 m (360 ft) by 226 m (740 ft) to yield a rectangular surface area of 2.47 hectares (6.1 acres). The lagoon is 3 m (10 ft) deep with 3-to-1 sloping sides. The capacity of the lagoon is 66,700 m^3 (17.6 million gallons). It contains 58 lines of aeration tubing spaced 3 m (10 ft) apart at the inlet end of the lagoon and 6 m (20 ft) apart toward the outflow end. These figures correspond to a design loading on the primary lagoon of 157 kg BOD_5/ha/day (140 lb BOD_5/acre/day) and a design detention time of 35 days.

Lagoon #2 is 56 m (185 ft) by 226 m (740 ft) to yield a surface area of 1.25 hectares (3.1 acres). The lagoon is 3 m (10 ft) deep and has a capacity of 31,000 m^3 (8.2 million gallons). There are 36 lines of aeration tubing evenly spaced 6 m (20 ft) apart in Lagoon #2.

Lagoon #3 is 37 m (120 ft) by 195 m (640 ft) to yield a surface area of 0.73 hectares (1.8 acres). The lagoon is 3 m (10 ft) deep and has a capacity of 15,900 m^3 (4.2 million gallons). Lagoon #3 has 32 lines of aeration tubing evenly spaced 6 m (20 ft) apart. There is an additional 30 m (100 ft) of length at the discharge end of this lagoon that is separated from the main section of the lagoon by a baffle and which provides a non-aerated chamber.

For the three lagoons, with a total of 4.45 hectares (11 acres) of surface area, the design loading is 86 kg BOD_5/ha/day (77 lb BOD_5/acre/day). The design detention time, based on a total lagoon volume of 113,500 m^3 (30 million gallons), is sixty days.

During the first three months of the performance study, effluent flowed by gravity from the aerated lagoon system to two dosing tanks. From the tanks it was pumped alternately to two parallel banks of intermittent sand filters. Each bank contains four cells, operated in parallel, with any one or more capable of being taken out of service. The sand filters were subject to severe blockage problems. The filters were removed from service in June, as they did not serve the purposes they were intended for. Filtered effluent discharges to a chlorine contact chamber, where a 12½% sodium hypochlorite solution is metered into the wastewater. Chlorine dosage is gaged to deliver 4 mg active chlorine per liter of wastewater. This dosage normally leaves a slight chlorine residual in the treated effluent. Final effluent discharges to the creek.

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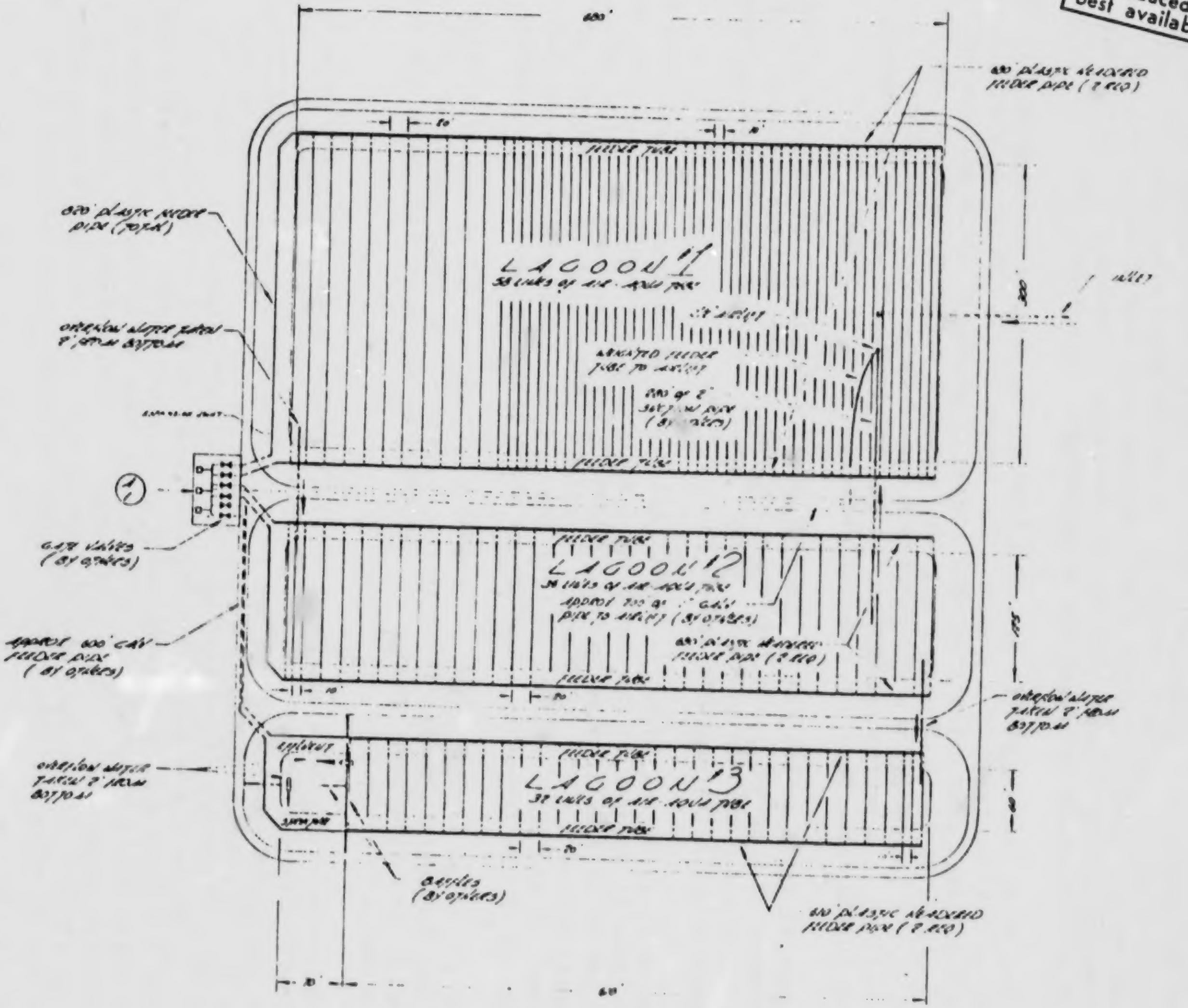

600'
10'
20'
800' plastic feeder pipe (total)
overflow water taken 8' from bottom
expansion joint
①
gate valves (by others)
approx 600' galv feeder pipe (by others)
overflow water taken 2' from bottom
effluent
sump pit
baffles (by others)
LAGOON #1
58 lines of air-aqua tube
3" airlift
aerated feeder tube to airlift
200' of 2" ... pipe (by others)
feeder tube
600' plastic weighted feeder pipe (2 req)
inlet
200'
LAGOON #2
38 lines of air-aqua tube
approx 200' of 1" galv pipe to airlift (by others)
600' plastic weighted feeder pipe (2 req)
125'
overflow water taken 2' from bottom
LAGOON #3
37 lines of air-aqua tube
600' plastic weighted feeder pipe (2 req)
60'
30'

Figure 2. Lagoon aeration system layout.

SECTION V

SAMPLING AND ANALYSIS PROCEDURES

Devices for continuous flow measurements and for routine sampling were not originally provided in the Pawnee treatment system. Plans for the one-year performance study included acquisition and installation of the equipment necessary to collect performance data on the aerated lagoon system, including the intermittent sand filters and the chlorine contact chamber.

Six sampling locations were selected: (The sampling sites are located on Figure 3).

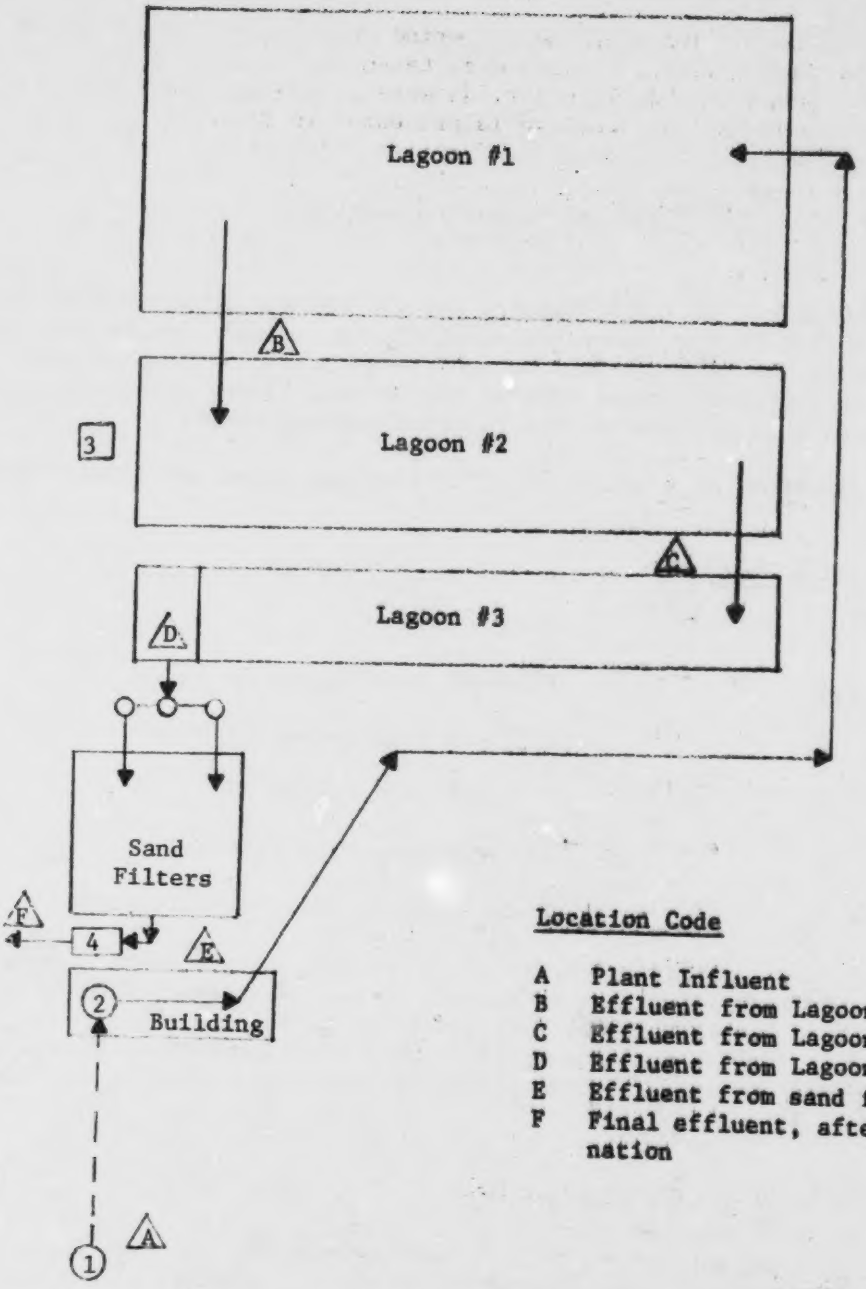
Location Code	Description
A	Plant influent
B	Effluent from Lagoon #1
C	Effluent from Lagoon #2
D	Effluent from Lagoon #3
E	Effluent from sand filters
F	Final outfall, after chlorination

Influent flow measurements were taken at Location A using a Palmer Bowlus flume and a flow meter equipped with a totalizer. A weir was constructed to measure flows at Location D. Sampling at Location A was flow proportional with respect to the flow indicated by the flow meter at this location. Flows at all other points were steady enough that time-controlled composite sampling was adequate.

Equipment

The sampling equipment used during the 12-month study is listed in Appendix A. Because the program required year-round sampling, including a severe winter climate, it was necessary to design a protective housing for each sampler. Heating and refrigeration units were enclosed in each housing to maintain proper sample temperatures.

Samplers located at Sites B and C required custom modification. A longer length of tubing was required between the sampler and the sample site.


Lagoon #1
B
3
Lagoon #2
C
Lagoon #3
D
Sand Filters
F
4
E
2
Building
1
A

Location Code

A	Plant Influent
B	Effluent from Lagoon #1
C	Effluent from Lagoon #2
D	Effluent from Lagoon #3
E	Effluent from sand filters
F	Final effluent, after chlorination

Figure 3. Sampling sites.

Modifications in the electrical system were necessary to lengthen the sampling cycle.

Samples were collected over a 13-month period starting in March, 1976. At four times during the study, samples were taken for 30 consecutive days (once each season). Seven-day sampling periods were scheduled during the other eight months. The sampling schedule is presented in Table 1. No samples were taken in January, 1977, because of the severity of the winter. During that period, the ice cover on each of the three lagoons exceeded 20 inches. Although the sampler housings were equipped with heaters, it was impossible to keep the feed lines from the lagoons to the samplers open. The ice cover did not break until mid-February; the sampling was resumed immediately.

TABLE 1. PAWNEE SAMPLING SCHEDULE

Date	No. of Sampling Days
1976 - March 23-29	7
April 1-30	30
May 17-23	7
June 14-20	7
July 1-31	31
August 16-22	7
September 13-19	7
October 1-31	31
November 15-21	7
December 13-19	7
1977 - February 14-20	7
March 1-31	31
Total Number of Sampling Days	179

Sampling Procedures

The Pawnee sampling and analytical program is summarized in Table 2. Composite samples, one for each sample location, were concurrently collected each morning. During the collection period, the operator completed the Operator's Log

TABLE 2. SAMPLING AND ANALYTICAL PROGRAM(1)

	Sample Location					
	A	B	C	D	E	F
Daily Flow (total, minimum, maximum)	x			x		
pH	x	x	x	x		x
Temperature	x	x	x	x		x
Dissolved oxygen	x	x	x	x		x
Alkalinity	x	x	x	x		x
Suspended solids, total	x	x	x	x	x	x
Suspended solids, volatile	x	x	x	x	x	x
BOD_5, total	x	x	x	x	x	x
BOD_5, soluble(2)	x	x	x	x		x
COD, total	x	x	x	x	x	x
COD, soluble(2)	x	x	x	x		x
Phosphates, total	x			x		x
Nitrogen, total Kjeldahl	x			x		x
Nitrogen, ammonia	x			x		x
Nitrites				x		
Nitrates				x		
Algae cell count		x	x	x		x
Fecal coliforms				x	x	x

(1) All tests are to be performed daily during the stated consecutive sample program, with the exception of algae cell count. Algae are to be counted one day during each of the 7-day sampling periods and three days, a week apart, during each of the 30-day sampling periods.

(2) Tests performed with Whatman #2 filter paper.

and set up automatic samplers for the next 24-hour sampling period.

The Operator's Log included the results of field analyses of pH and dissolved oxygen and flow measurements, as well as observations on weather. Daily consumption of electricity to operate the treatment system and the samplers was also recorded.

An appropriate quantity of the composite samples from Locations D, E, and F was transferred to specially prepared containers for fecal coliform count. All sample bottles were labeled and packed in a Coleman cooler; the coolers were packed with ice, and transported by car to Springfield, Illinois. The samples were then transported daily by Greyhound bus from Springfield to Chicago, where they were picked up by laboratory personnel. All laboratory analyses were performed by Suburban Laboratories, Inc. Fecal coliform counts and analyses for BOD_5 were started immediately upon receipt of samples. Analytical methods were as specified by the USEPA, and are designated in Table 3.

TABLE 3. ANALYTICAL PROCEDURES (1)

Field Analyses

Parameter	Reference #
pH	method 424b, p. 461
Dissolved oxygen	method 422F, p. 450
Temperature	method 212, p. 125

Laboratory Analyses

Parameter	Reference #
Alkalinity	method 403, p. 278
Suspended solids, total	method 208D, p. 94
BOD_5, total	method 507, p. 543 BOD_5-DO by titration

(continued)

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(1) Unless otherwise specified, Reference # refers to Standard Methods for the Examination of Water and Wastewater, 14th Edition.

TABLE 3. (continued)

Laboratory Analyses

Parameter	Reference #
BOD$_5$, soluble	method 507, p. 543 sample first filtered with Whatman #2 filter paper
COD, total	method 508, p. 550
COD, soluble	method 508, p. 550 sample first filtered with Whatman #2 filter paper
Phosphate, total	method 425C111, p. 476 Persulfate digestion method 425E, p. 479 Colorimetric determination
N, total Kjeldahl	method 421, p. 437
N, NH$_3$	method 418B, p. 412
NO$_2$	method 420, p. 434
NO$_3$	method 419D, p. 427
Fecal coliform	method 909C, p. 937
Algae count	Equipment A. Howard Mold Counting Device (0.1 mm deep)

(continued)

TABLE 3. (continued)

Laboratory Analyses

Parameter	Reference #
Algae count	Equipment B. Filar Micrometer eyepiece. C. 10X objective on A O microscope. Procedure A 1. Above setup should give a field of 1.5 sq. mm. 2. Place 2-3 drops of diluted sample onto Howard Mold Counting Device with cover slip resting on the two pillars (Volume observed now 0.0015 ml). 3. Average the number of algae cell per field. Average number of algae X 666.66 X reciprocal of dilution X 100 ml = total number of algae per 100 ml sample. Procedure B 1. If the concentration of algae is low to very low, run 100 ml of sample or its dilution through a gridded millipore filter.

(continued)

TABLE 3. (continued)

Laboratory Analyses

Parameter	Reference #
Algae count	Procedure B 2. Place the filter under a microscope and average the number of algae cells per square (98 squares on the grid). Average number of algae X 98 squares = total algae per 100 ml. or Average number of algae X reciprocal of its dilution X 98 = total algae per 100 ml.

SECTION VI

EVALUATION OF PAWNEE AERATED LAGOON SYSTEM

The purpose of this project was to collect reliable year-round performance data on the aerated lagoon system at Pawnee, Illinois. The Pawnee data, together with that collected on other aerated lagoons, will be used to determine if well-designed aerated lagoons can meet Secondary Treatment Standards as defined under 40 CFR 133, and reported in 41 FR 30785 dated July 26, 1976.

Treatment Plant Loading

The Pawnee system, designed by George H. Knostman, Jr., Associates, consulting engineers to the Village of Pawnee, was put into operation in 1978. The system has a hydraulic design capacity of 1,890 m^3/day (0.5 mgd) to provide treatment of domestic wastes for a maximum population of 5,000. The BOD_5 design loading is 386 kg/day (850 lb/day). The 4.45 hectares (11 acres) of surface area have a design loading of 86.5 kg BOD_5/ha/day (77 lbs BOD_5/acre/day). Design detention time is 60 days.

During the planning phase of the performance study, actual flow and loading were estimated to be about one-half of design flow and loading, and detention time to be double. Connected population was estimated at 2,250.

During the performance study, which started in March, 1976, the influent flow averaged 787 m^2/day (0.208 mgd) or 41.2 percent of design capacity. However, BOD_5 loadings averaged 365 kg/day (804 lb/day) and surface loadings averaged 83 kg BOD_5/ha/day (74 lb BOD_5/acre/day) or 98.8 and 96.1 percent of design. Actual flow and loading for each month of the study is presented in Table 4.

The design called for an influent BOD_5 concentration of 200 mg/l. Monthly averages of the influent BOD_5 concentrations during the performance study ranged from 233 to 799 mg/l. The 12-month average was 473 mg/l; soluble BOD_5 averaged 103 mg/l. Monthly averages of the influent COD ranged from 367 to 1,920 mg/l. The 12-month average was 1,026 mg/l, while soluble COD averaged 202 mg/l. TSS in the effluent averaged 497 mg/l and the monthly averages ranged between 178 and 768 mg/l. VSS averaged 391 mg/l.

Detention time for Lagoon #1 averaged 85 days; detention time in the 3-lagoon system averaged 147 days, compared with a design detention time of 60 days.

There is no industry in Pawnee; the community is essentially a residential area with little commercial development. There is therefore no obvious

TABLE 4. PAWNEE LOADING RATES

	Influent Flow mgd	BOD_5 lb/day	BOD_5 lb/acre/day
Design	0.5	850	77
Actual*			
1976 - March	0.264	511	47
April	0.207	475	43
May	0.227	886	81
June	0.212	827	76
July	0.204	765	70
August	0.210	1,049	97
September	0.199	955	88
October	0.203	1,348	123
November	0.182	828	75
December	0.202	929	85
1977 - February	0.153	507	45
March	0.231	565	52
12 month average	0.208	804	74

*Based on average of daily flows for each month.

Note: 1 mdg = 3,785 m^3/day
1 lb/acre/day = 1.121 kg/ha/day

explanation for the above-average strength of the wastewater.

During the performance study, the Pawnee system was hydraulically underloaded. However, average BOD_5 loading has almost reached design capacity, and in fact, BOD_5 loading exceeded design capacity during 5 of the 12 months of the sampling program. Connected population is approximately 2,250; the population equivalent, based on BOD_5 loading, averaged 4,700 during the project period.

Treatment Efficiency

Secondary Treatment Standards, as defined under Public Law 92-500 (40 CFR - 133 and reported in 41 FR 30785, July 26, 1976) calls for 85% removal of both BOD_5 and suspended solids. The Pawnee 3-lagoon system continuously exceeds that performance requirement. Treatment efficiencies, based on monthly averages, are summartized in Table 5. Removal rates were calculated by comparing pollutant concentrations in the influent with those in the final effluent for the same period of time. It is important to note that no attempt has been made to incorporate into the calculations Pawnee's theoretical 146-day detention time or any other detention time.

Biochemical oxygen demand: During the first eight months of the program, the BOD_5 concentration in the influent steadily increased. The average for March, 1976, was 233 mg/l; peak loading occured in October, 1976, when BOD_5 averaged 799 mg/l. During that same period, the BOD_5 in the final plant effluent varied from 2 to 6 mg/l. The 6 mg/l average occurred in May, 1976, five months before the influent reached its maximum strength. During February, 1977, when the strong influent, based on the 146 days detention, should have reached the outfall, the effluent BOD_5 averaged 4 mg/l.

During the winter of 1976-77, Pawnee experienced excessively cold weather. By January, 1977, the ice cover on the lagoon system precluded operation of the sampling program. Although sample housings were equipped with heaters, feed lines from lagoons to samples could not be cleared of ice. The ice cover on the lagoons measured in excess of 559 mm (22 inches). The air supply to the ponds, however, continued to function at all times. No sampling program was conducted during January, but was resumed in February, as soon as weather conditions returned to normal. The effluent BOD_5 during the February program (7 days) averaged 4 mg/l. It rose to 10 mg/l during March, 1977. Although the final effluent BOD_5 increased during March, there was no evidence that the lagoons had gone anaerobic during the freeze.

Soluble BOD_5 in the influent averaged 103 mg/l for the year. The soluble BOD_5 was 39 mg/l in the initial survey period in March, 1976, and rose steadily to 143 mg/l in September, then dropped off again to 126 mg/l in December. Soluble BOD_5 on resumption of sampling in February was 97 mg/l and dropped to 83 mg/l in March, 1977. Effluent soluble BOD_5 averaged 2 mg/l for the year and ranged between 1 and 5 mg/l. Removal efficiencies on a monthly basis ranged between 94.0% and 99.3%, with an average of 97.8%.

(text continued on page 27)

TABLE 5. PAWNEE TREATMENT EFFICIENCIES

	Samples Analyzed	BOD_5			BOD_5, soluble		
		Inf*	Eff*	% Removal	Inf*	Eff*	% Removal
1976							
March	(7)	233	3	98.7	39	2	94.9
April	(27)**	277	3	98.8	58	1	98.3
May	(7)	470	6	98.7	75	3	96.0
June	(7)*	470	3	99.4	88	1	98.8
July	(19)**	452	3	99.2	130	2	98.5
August	(7)	602	2	99.6	136	2	98.5
September	(7)	578	2	99.6	143	1	99.3
October	(25)**	799	2	99.7	127	1	99.2
November	(6)**	548	2	99.6	129	1	99.2
December	(7)	554	3	99.4	126	2	98.4
1977							
February	(7)	395	4	98.9	97	2	97.9
March	(24)	296	10	96.8	83	5	94.0
12-month average		473	4	99.0	103	2	97.8

(continued)

* In mg/l

** Effluent samples analyzed include 30 in April, 31 in July, 29 in October, and 7 in November.

TABLE 5. (continued)

	Samples Analyzed	COD			COD, soluble		
		Inf*	Eff*	% Removal	Inf*	Eff*	% Removal
1976							
March	(7)	367	21	94.3	53	15	71.7
April	(27)	440	14	97.3	81	11	86.4
May	(7)	753	53	92.9	146	50	65.7
June	(7)**	1,147	78	93.2	231	58	74.9
July	(19)**	1,208	65	94.6	248	52	79.0
August	(7)	1,920	91	95.3	361	57	84.2
September	(7)	1,207	51	95.8	298	41	86.2
October	(25)**	1,572	54	96.6	290	44	84.8
November	(6)**	1,156	46	96.0	294	42	85.7
December		1,115	63	94.3	246	58	76.4
1977							
February		779	55	90.5	213	49	77.0
March		649	72	88.9	220	55	75.0
12-month average		1,026	55	94.1	202	45	77.7

(continued)

*In mg/l

**Effluent samples analyzed totaled 6 in June, 31 in July, 29 in October and 7 in November.

TABLE 5. (continued)

	Samples Analyzed	Total Suspended Solids			Volatile Suspended Solids		
		Inf*	Eff*	% Removal	Inf*	Eff*	%Removal
1976							
March	(7)	178	22	87.6	100	7	93.0
April	(27)**	236	10	95.6	183	4	97.8
May	(7)	370	52	85.9	300	15	95.0
June	(7)	544	23	95.8	448	9	98.0
July	(19)**	768	7	99.1	564	4	99.3
August	(7)	758	8	98.9	618	4	99.3
September	(7)	529	21	96.0	396	11	97.2
October	(25)**	678	25	96.3	527	14	97.3
November	(6)**	560	14	97.5	469	6	98.7
December	(7)	543	24	95.6	469	13	97.2
1977							
February	(7)	387	19	95.1	334	10	97.0
March	(24)	417	29	93.2	286	15	94.7
12-month average		497	21	94.7	391	9	97.7

(continued)

*In mg/l

**Effluent samples totaled 30 in April, 31 in July, 29 in October and 7 in November.

TABLE 5. (continued)

	Samples Analyzed	Phosphorus, total			Nitrogen, total		
		Inf*	Eff*	% Removal	Inf*	Eff*	% Removal
1976							
March	(7)	24	6	75.0	25	3	88
April	(27)**	24	2	91.0	29	2	92.3
May	(7)	27	3	88.8	47	5	89.4
June	(7)	31	4	86.8	49	2	95.5
July	(19)**	36	10	72.9	53	4	92.0
August	(7)	35	10	71.4	38	4	89.2
Septmeber	(7)	51	13	74.5	64	5	92.2
October	(25)**	49	12	75.5	80	4	95.5
November	(6)**	52	16	69.3	74	4	94.3
December	(7)	39	19	51.3	53	5	90.6
1977							
February	(7)	40	31	22.5	56	10	82.8
March	(24)	30	31	--	48	13	73.5
12-month average		37	13	70.8	51	5	89.7

(continued)

*In mg/l

**Effluent samples analyzed totaled 30 in April, 31 in July, 29 in October and 7 in November.

TABLE 5. (continued)

	Samples Analyzed	Nitrogen, NH_3		
		Inf*	Eff*	% Removal
1976				
March	(7)	12	1.4	88.3
April	(27)	13	0.2	98.6
May	(7)	20	0.4	98.0
June	(7)**	31	0.7	97.7
July	(19)**	24	0.6	97.5
August	(7)	26	0.5	97.9
September	(7)	36	0.5	98.5
October	(25)**	35	0.4	98.9
November	(6)**	37	0.5	98.7
December	(7)	34	0.5	98.5
1977				
February	(7)	29	4.2	85.5
March	(24)	18	5.5	69.4
12-month average		26	1.3	93.9

(continued)

*In mg/l

**Effluent samples analyzed totaled 6 in June, 31 in July, 29 in October and 7 in November

TABLE 5. (continued)

	pH			Alkalinity**		
	Samples Tested	Inf*	Eff*	Samples Tested	Inf***	Eff***
1976						
March	--			(7)	184	157
April	--			(27)	228	179
May	(3)	7.4	9.0	(7)	242	130
June	(7)	6.8	7.7	(7)	277	186
July	(19)	6.9	7.7	(19)	255	166
August	(7)	7.0	7.6	(7)	256	168
September	(7)	7.0	8.1	(7)	278	167
October	(25)	7.1	7.9	(25)	254	174
November	(6)	7.4	8.2	(6)	238	167
December	(7)	7.2	8.5	(7)	218	168
1977						
February	(7)	7.4	7.9	(7)	230	184
March	(24)	7.4	8.1	(24)	214	160
12-month average		7.1	7.9		242	167

*In pH units
**Reported (as Calcium Carbonate) to pH 4.5
***In mg/l

TABLE 6. COD/BOD_5 RATIOS

	In The Influent	In The Effluent
1976		
March	1.58	7.00
April	1.59	4.00
May	1.60	8.83
June	2.44	26.00
July	2.67	21.67
August	3.19	45.50
September	2.09	25.50
October	1.97	27.00
November	2.11	23.00
December	2.01	21.00
1977		
February	1.97	13.75
March	2.19	7.20
12-month average	2.12	19.20

Chemical Oxygen Demand: Influent COD averaged 1,026 mg/l for the year. COD in the effluent was approximately twice the total BOD_5 value. The influent COD values rose and fell as the total BOD_5 values did. The effluent COD averaged 55 mg/l, ranging from 12 to 91 mg/l. Total COD removal averaged 94.1% and varied between 88.9 and 97.3% on a monthly basis.

Soluble COD had a pattern similar to soluble BOD_5. The influent rose from 53 mg/l in March, 1967, to 361 mg/l in August, then declined to 220 mg/l in March, 1977. Effluent COD averaged 45 mg/l, and ranged between 11 and 58 mg/l. Soluble COD reductions averaged 77.7%.

The ratio of total COD to total BOD_5 was made on the averages and these show the influent ratio averages 2.12 and ranges between 1.58 and 3.19. The three highest averages occurred in the warmest months of June, July, and August. The effluent total COD to total BOD_5 ratio averaged 19.2 and ranged between 4.0 and 45.5.

The higher ratios, both influent and effluent, generally coincide with periods of high BOD_5 and COD, which may indicate that most but not all of the increased concentrations were caused by nonbiodegradable components.

Suspended Solids: Suspended solids in both the influent wastewater and the final effluent were more variable than BOD_5. During the project program, influent suspended solids varied from 178 to 768 mg/l, and averaged 497 mg/l. Suspended solids in the final effluent varied from 7 to 52 mg/l; the 12-month average was 21 mg/l. Removal rates, calculated by traditional methods, ranged from 98.9 to 85.9%. The average was 94.7%. Suspended solids reductions averaged 86% for Lagoon #1, and 94% for the 3-lagoon system. Although the average for the overall system, including the time the sand filters were operational, was calculated at 94.7% it must be noted that the suspended solids content of the final effluent often exceeded the concentration in the effluent from Lagoon #3, and that deltas of sand were highly visible at the final outfall. The sand is presumed to have washed down from the sand filters.

The Pawnee sand filters had been reported to be ineffective by the Village authorities prior to the initiation of the project program. The sand filters were in operation during the first three months of the survey, during which time the overall suspended solids removal averaged 89.7%. May was especially bad in that the effluent suspended solids at 52 mg/l average exceeded effluent criteria. In contrast, the effluent suspended solids out of Lagoon #3 averaged 22 mg/l, well below the 45 mg/l criteria permitted under Federal Regulations. The Village authorities had noted that suspended solids removal over the three-pond system were sufficient to meet U.S.E.P.A. requirements, and they decided to bypass the sand filters, which was done in May. Suspended solids removal for the next nine months of the survey averaged 96.3% while effluent suspended solids values averaged 19 mg/l and ranged between 7 and 29 mg/l; a very satisfactory performance.

Volatile suspended solids in the influent averaged 391 mg/l for the survey period, while the treatment plant effluent VSS averaged 9.3 mg/l. Influent VSS concentrations were quite variable but in general, the highest concentrations entering the treatment plant coincided with the warmest momths. The highest influent VSS concentration found was 2,032 mg/l on October 13th. VSS in Lagoon #1 effluent averaged 24 mg/l indicating VSS reduction across Lagoon #1 at 93.9%. The VSS continued to decrease as it traversed the subsequent lagoons and average VSS concentrations out of Lagoon #2 ran 20 mg/l while Lagoon #3 averaged 14.5 mg/l. The overall VSS reduction averaged 97.7% for the treatment plant as a whole.

Phosphorus: Total phosphorus as phosphate in the influent raw sewage ranged from a low of 24 mg/l during the first months of the project program to a peak of 52 mg/l during November, 1976. Concentrations in the final effluent ranged from 2 to 31 mg/l. Removal rates, calculated according to conventional methods, i.e., phosphates in raw water minus phosphates in final effluent divided by phosphates in the raw water, on a daily basis, showed an almost continuous decrease over the project period. The removal rate during the first month (March, 1976) was 75%. It peaked at 91% during April, 1976, and then deteriorated steadily until March, 1977, when total phosphate in the final effluent (31 mg/l) exceeded that in the raw water (30 mg/l).

Nitrogen: The concentration of total Kjeldahl nitrogen in both raw wastewater and final effluent generally followed the same pattern as that of the BOD_5. Concentration of the final effluent was consistent, ranging from 2 to 5 mg/l until February and March, 1977, when it jumped to 10 and 13 mg/l, respectively. Calculated removal rates started at 88% in March, 1976, peaked at 95.5% in June and October, and dropped to 73.5% by March, 1977.

Ammonia nitrogen concentrations during the first project month averaged 12 mg/l in raw sewage and 1.3 mg/l in the final effluent. Influent concentrations peaked at 37 mg/l during November, while effluent concentrations from April through December ranged from 0.2 to 0.7 mg/l. Although influent ammonia nitrogen decreased steadily from the November peak of 37 mg/l to the March average of 18 mg/l, concentrations in the final effluent during February and March jumped to 4.2 and 5.5 mg/l, respectively. Removal rates over the study period varied from 98.9% during October to 69.4% during March, 1977.

pH and Alkalinity: The influent pH averaged 7.1 pH units for the survey and ranged between 6.5 and 7.9. The pH value rose as the wastewater passed through the lagoon system. The effluent out of Lagoon #1 averaged 7.6 pH units with a range of 6.7 to 8.7, while Lagoon #2's effluent pH averaged 8.0 with a range of 6.8 to 9.1. Lagoon #3's effluent averaged 8.2 and ranged between 7.4 and 9.4. A reduction in pH occurred in the chlorine contact chamber (average pH 8.0) and the final effluent (pH of 8.1); this is attributed to the effects of chlorine addition. The final effluent pH ranged between 6.8 and 9.1, the higher pH value being above Illinois' maximum limit of 9.0. This pH value (greater than 9.0) was reached on one day out of the 130 days sampled and tested for pH in the effluent.

The alkalinity in the influent to the wastewater treatment plant averaged 242 mg/l (as calcium carbonate) to pH 4.5. Influent alkalinity was in the 180 to 225 mg/l range in the spring of 1976, then increased to between 242 and 287 mg/l in the summer months, before dropping down to between 214 and

238 mg/l in the fall and winter months. The effluents from the lagoons averaged 167 mg/l alkalinity from Lagoon #1, 157 mg/l from Lagoon #2 and 166 mg/l alkalinity from Lagoon #3. The lagoons exerted a leveling effect on the alkalinity. The influent range over the year was between 184 and 278 mg/l, while the lagoon alkalinities, which were quite similar, only ranged between 123 and 181 mg/l. The plant effluent averaged 167 mg/l, and ranged between 130 and 186 mg/l.

The pH of the wastewater increased as the wastewater traversed the lagoon system. Conversely, the alkalinity of the wastewater decreased as it made the same passage across the lagoons. The two effects, apparently diametrically opposite to one another, are the result of the biological oxidation mechanism taking place in the lagoon. pH is a measure of the intensity of the alkaline materials in the wastewater, while alkalinity is a measure of the total amount of the alkaline materials present. The principal alkaline materials in the wastewater are phosphate, ammonia nitrogen, bicarbonate, carbonate and hydroxyl ion. The biological species in the ponds consume phosphates, ammonia nitrogen and carbon dioxide from the wastewater which in turn increases the pH of the wastewater. The wastewater effluent from the plant experienced a slight pH decline due to the addition of chlorine. The decrease in alkalinity is attributed to the reduction in the alkaline ammonia and the reduction of phosphates which contribute a buffering action to the wastewater. These two effects more than offset the reduction in carbon dioxide across the lagoons.

Dissolved Oxygen: Influent DO (see detailed data in Appendix) was negligible during the warmer months, but increased during the colder periods. During the first eight months of the program, the average DO readings for each lagoon showed an increase as the flow progressed through the system. Average DO in Lagoon #1 was 2.4 mg/l; it was 3.01 for Lagoon #2, and 3.06 for Lagoon #3. DO averaged 3.6 mg/l in both the flows from the sand filters and the final effluent.

The dissolved oxygen probe became inoperative early in the November seven-day sampling period. The probe could not be recalibrated, and a replacement was ordered. The new probe was used during the December, February and March sampling periods. DO reading during this period were significantly higher than those previously registered. Some of the readings exceeded the solubility of oxygen in water at the prevailing water temperature, when it was in the 1° to 7°C range. The local plant operator verified the probe readings, however, by analyzing selected samples by titration method (Standard Methods). Titration tests indicated the probe was functioning properly. The winter was extremely severe. Icing problems began to develop during December, in January the ice cover on all three lagoons exceeded 20 inches. Aeration continued under the ice cover. It may be that the combination of extremely low temperatures and the substantial ice cover accounted for the high DO readings during the last three months of the program. The DO readings were highest during February, when the ice cover was breaking up, and had dropped during March when weather conditions were more nearly normal.

Algae: The algae count (see detailed data in Appendix) for the lagoons in the cold weather months was low, but increased dramatically with the onset of warmer conditions. Lagoon #1 algae count in colder weather was 300 per 100 ml and increased to 1,000,000 per 100 ml to 400,000,000 per 100 ml during the warmer periods. In the same manner, Lagoon #2 algae count ranged from 100 per ml to 150,000,000 per ml in May and June. Lagoon #3 algae count went from the 400 to 600 per ml range to the 800,000 to 6,000,000 per ml range. The effluent algae count was usually lower; less than 10 per 100 ml during cold months but greatly increased; up to 15,000,000 per ml in May; during warm weather periods, and dropped down to below 500 per ml in June. Algae play a vital role in the Pawnee wastewater treatment system. It is postulated that algae will destroy some of the organic loading on the lagoon system. The above data indicate that the ponds will grow algae; and that the algae count appears in balance, i.e., algae lost in the effluent, consumed by higher life forms, or lost through death will be made up by growth. It is also noted that algae do not contribute a significant amount of suspended solids to the final plant effluent.

Fecal Coliforms: The Federal regulations for secondary treatment (40 CFR 133; 41 FR 30785, July 26, 1976) do not use fecal coliforms as a criterion of performance. The Pawnee wastewater treatment plant operates to meet effluent criteria for fecal coliforms promulgated by the State of Illinois. This criterion calls for a maximum of 400 fecal coliforms per 100 ml in the plant effluent. The reduction of fecal coliform across the three-cell lagoon system was effective in that for most of the year, fecal coliforms discharged from the lagoon system was well below 400 per 100 ml; the geometric average for fecal coliforms for the lagoon effluent averaged 33 per 100 ml for the year. The lagoon system effluent is chlorinated as it leaves the sand filters by dripping a 12½% hypochlorite solution into the flowing stream as it passes through a manhole. Chlorine addition is metered to add 4 mg active chlorine to each gallon of wastewater passing through the manhole. The final wastewater treatment plant effluent has a geometric average for the year of 21 fecal coliforms per 100 ml.

However, in July, destruction of these organisms was especially poor; on 12 of the 28 days fecal coliforms in the effluent were in excess of 400 cells per 100 ml, the Illinois standard for permissible bacterial discharge. The situation improved in succeeding months, August having only two days above 400 and October only one. The high July values are probably a result of chlorine feed problems. Fecal coliform count in the effluent from Lagoon #3 were somewhat less than the final effluent, as only six days were above 400 from the lagoons in July and four days were above 400 during the subsequent measuring periods. The higher bacterial count may be attributable to warm weather during the summer, which is conducive to bacterial growth, especially in the underdrains from the facilities, which act as incubators.

Flow: Total influent flow (see detailed data in Appendix) averaged 787 m^3/day (208,000 gpd) during the project. Maximum daily flow was 1,379 m^3 (369,000 gallons) in March 1976; minimum daily flow was 462 m^3 (122,000 gallons) in February 1977. The maximum instantaneous flow recorded was 2,498 m^3/day (660,000 gpd) on March 18, 1977, a rainy day. The lowest instantaneous flow recorded was 378.5 m^3/day (100,000 gallons per day) on February 18, 1977.

The effluent flows indicated in Appendix B are definitely suspect. The original program design called for construction of a weir box at the final discharge to Horse Creek. Construction was completed, but was unsatisfactory. A weir box was subsequently constructed at the overflow pipe from Lagoon #3. Flow measurements during the early project period were affected by a severe leakage from Lagoon #1 through muskrat holes. The berm was repaired over the summer months. However, beginning in July, flows from Lagoon #3 were measured as a constant value, although the true flows obviously varied significantly. This indicated a leak or error in the measurement device, so these data are not valid. Efforts to repair the measurement device were unsuccessful.

Nitrites and Nitrates

For information purposes, nitrites and nitrates were analyzed in the effluent from Lagoon #3. Nitrites are usually an oxidation product of ammonia, while nitrates are the end product of the aerobic decomposition of nitrogenous matter.

The nitrites leaving in Lagoon #3 effluent averaged 0.177 mg/l for the year. The maximum nitrites were 1.3 mg/l detected in July 1976, though the major portion of the nitrites (some 64%) were less than 0.1 mg/l. The average nitrite concentrations in April, May and June 1976 were below 0.05 mg/l, but this jumped abruptly to 0.52 mg/l in July. As noted above, the highest nitrite analyses occurred in July. The nitrites declined again to 0.035, 0.021 and 0.046 mg/l respectively in August, September and October, then jumped again to the 0.4 mg/l range in October and November. December's nitrite value averaged 0.12 mg/l. Following the ice break-up and resumption of flows out of Lagoon #3, nitrites in February averaged 0.04 mg/l but rose to 0.20 mg/l in March. The nitrite variations do not seem to be a function of temperature in that both low and high nitrite values occurred during cool and warm months.

Nitrates in Lagoon #3 effluent averaged 0.87 mg/l for the year. Nitrates appear to follow a temperature trend, in that the initial nitrate concentrations in April 1976 averaged 1.5 mg/l, and this then dropped fairly steadily to the September value of 0.15 mg/l. The onset of cooler weather saw the nitrates rise again to approximately the 1.0 mg/l range.

For comparative purposes, ammonia nitrogen in Lagoon #3 effluent waters are also discussed. The ammonia nitrogen averaged 1.4 mg/l. The ammonia nitrogen averaged 0.9 mg/l in April, declined in May to 0.4 mg/l, then rose to 0.7 mg/l in July, then steadily declined to the 0.4 mg/l range in October and November. The ammonia nitrogen then rose to 0.5 mg/l at the end of the year. Ammonia nitrogen levels in the effluent averaged 4.4 following resumption of flows out of the pond in February of 1977, and jumped to an average 6.1 mg/l in March. The above nitrogen reductions in the summer coincided with the highest algae growth, and indicate the usage of ammonia as a foodstuff by the biological species in the lagoon. Conversely, during the colder winter months, there were almost no algae in the lagoons and ammonia consumption was apparently limited.

TABLE 7. POND III EFFLUENTS

(average concentrations in mg/1)

Year/Month	Nitrites		Nitrates		Ammonia Nitrogen	
	No. of Samples	Avg. Conc.	No. of Samples	Avg. Conc.	No. of Samples	Avg. Conc.
1976						
March	--	--	--	--	--	--
April	(24)	0.049	(25)	1.5	(25)	0.90
May	(7)	0.020	(7)	1.0	(7)	0.40
June	(7)	0.021	(7)	0.8	(7)	0.60
July	(31)	0.552	(31)	0.9	(31)	0.73
August	(7)	0.035	(7)	0.27	(7)	0.57
September	(7)	0.021	(7)	0.15	(7)	0.48
October	(29)	0.046	(29)	0.23	(29)	0.39
November	(7)	0.378	(7)	0.95	(7)	0.38
December	(7)	0.121	(7)	0.90	(7)	0.49
1977						
January	--	--	--	--	--	--
February	(7)	0.039	(7)	0.97	(7)	4.4
March	(24)	0.157	(24)	1.18	(24)	6.1
Annual Average	(157)	0.177	(158)	0.87	(158)	1.4

Operational Problems

A severe drought condition over Central Illinois coincided with the summer testing period. The Pawnee lagoons were the principal open bodies of water in the area which attracted a number of wild animals to the ponds. Muskrats were especially attracted to the lagoons. The muskrats burrowed into the lagoon berms causing innumerable leaks and also destroyed polyethylene tubing used as feed lines from the lagoons to the samplers. Frequent replacement of the sampler tubing was necessary. The muskrats also chewed sections of the aeration tubing laid on the lagoon floor. This problem was observed as deviations in the air bubbling pattern on the lagoon surface. Repairs to the aeration tubing are difficult once it is in place. The aeration tubing repairs can be effected either by emptying the lagoon or utilizing a diver to replace the damaged tubing. The tubing was not replaced during the survey, but provisions to utilize a local diver were being made.

The sand filters installed at the Pawnee wastewater treatment plant did not give satisfactory service. The sand filters were subject to frequent blockage problems that required substantial maintenance to rectify. In addition, the local operating people and the Village consulting engineer felt the filters did not reduce suspended solids efficiently. This condition existed prior to the current survey, and the continuous effort required to keep the filters operating was not felt to be worthwhile by the Village authorities, who ordered the filters bypassed in mid-June.

The winter during the survey period was one of the coldest on record. In late December, the lagoons froze over and ice cover continued until a thaw developed in mid-February. The ice cover was as much as 20 inches thick. The aeration system continued to operate during this period. The principal effect was a cessation of overflow from Lagoon #3. Desk calculations indicate the weight of wastewater in the influent was equal to the weight of the ice cover on the lagoons. Thus no water loss took place. Resumption of overflow in mid-February showed a slight increase in total BOD_5 and suspended solids when compared to the influent values, and a slight reduction of wastewater treatment plant efficiency can be expected during the abnormally cold winter months.

SECTION VII

AVERAGE WASTEWATER TREATMENT AND PLANT REMOVALS

A complete and accurate evaluation of the Pawnee Wastewater Treatment Plant would have to take into account the time for a given volume of water to pass through the system. This time, the flow-through time, is somewhat less than the detention time (volume divided by influent rate) because of short circuiting caused by convection currents, wind action, wave action, etc. Thus if one wishes to calculate how the ponds removed BOD_5 (for example) from a given volume of water, the BOD_5 of this water volume would be analyzed and evaluated on the water volume as it actually flowed out of each pond, the filters, the chlorine contact chamber, or the total plant. The flow-through time for the Pawnee plant is not known and its determination by any acceptable tracer techniques would be extremely difficult because of the aeration system as used at Pawnee. The Pawnee aeration mechanism not only aerates the water, but imparts a circulation pattern to the water centered around each aeration tube. The aeration scheme is designed to segregate the water into "cells" and the water is ostensibly passed from cell to cell. Needless to say, the acutal detention time of a volume of water in this type of system is difficult to envision or to determine.

An alternate approach was made to evaluate the Pawnee treatment plant. This approach compared average characteristics for the various sample volumes taken. In a short-range test, this method is patently invalid, but over a time period of one year, the average concentration of the various characteristics tends to even out and approach a true average value, which is suitable for the purposes on hand.

The average wastewater characteristics for the ponds are tabulated in Table 7. This chart almost graphically shows the reduction of the waste characteristics across each unit of the wastewater treatment system. The major reduction occurs in Lagoon #1, which has the greatest detention time and air capacity. The treatment plant's impact on the measured wastewater characteristics is discussed in detail below:

1. The influent total BOD_5 average of 473 mg/l is considerably above customary 200 mg/l value quoted for normal wastewater. Pawnee is a non-industrial agricultural community and this BOD_5 value is somewhat of a suprise. The reasons for this high value were not investigated. The overall total BOD_5 reduction was 99%, with 96% of this reduction taking place in Lagoon #1. Lagoon #3 effluent total BOD_5 at 14.5 mg/l was higher than the total BOD_5 in the

effluent from Lagoon #2. This increase could be just a quirk in the numbers, or it could reflect the organisms in Lagoon #3. Lagoon #3 has a substantial bream population. Effluent total BOD_5 at 4 mg/l meets the 10 mg/l BOD_5 value required by the State of Illinois for effluents discharging to streams with less than 5 to 1 dilution ratio.

2. Soluble BOD_5 was 103 mg/l in the influent. The overall reduction of soluble BOD_5 was 98% with 91% occurring in the first lagoon.

3. Total COD reduction in the system was 94.5%, with 90.5% taking place in the first lagoon. The influent COD at 1,026 is slightly more than twice the total BOD_5 value, and is not abnormal in that respect. There was only a slight reduction of total COD in Lagoon #3, which could reflect the higher total BOD_5 experienced in this lagoon. There was a significant reduction in COD across the filters.

4. The soluble COD of the plant influent was 202 mg/l. Reduction was 78% with 67% taking place in the first lagoon. The influent soluble COD was twice the influent soluble BOD_5. Subsequent analyses show soluble COD values ranged from 7 to 22 times the corresponding soluble BOD_5. This would imply a non-organic material that gave a COD value; in all probability that material is salt. There is no mechanism known that would release salt in the lagoons. Salt, of course, does not have a true COD of itself, but it interferes with tht analytical method to appear as COD.

5. The total suspended solids was reduced from 497 mg/l to 22 mg/l with Lagoon #1 reducing the TSS 91.5% of the overall 94.7% reduction obtained. The final TSS value of 21 mg/l was higher than the 12 mg/l TSS value allowed by the State of Illinois for effluents discharging to streams with less than a 5 to 1 dilution ratio. Part of this high value is due to non-operation of the filters for most of the time the survey was in effect. The filters were bypassed for nine of the twelve months the survey took place. Lagoon #2 had more TSS in its effluent than its influent. Whether this is due to analytic errors or lagoon operation is not known.

6. Influent volatile suspended solids were 391 mg/l which is considerably above 200 mg/l VSS expected in raw sewage. No reason is known for this high value. Ninety-eight percent of the influent VSS was removed in Lagoon #1.

7. The total phosphate reduction was 70.8% with the three lagoons removing 57%. The slight reduction in phosphate between Lagoon #3 and the effluent is attributed to filter action and solids separation in the effluent lines.

8. Total Kjeldahl nitrogen averaged 51 mg/l in the influent. The plant removed 46 mg/l or 90% with 88% of the reduction taking place in the lagoons.

9. Ammonia nitrogen reduction averaged 93.9%, with the lagoons removing 94.5% of the total. The final ammonia nitrogen value was 1.3 mg/1 which is deemed excellent.

10. Fecal coliform out of Lagoon #3 averaged 33 per 100 ml while the final effluent averaged 21 fecal coliform per 100 ml. Both these values are below the Illinois effluent standard of 200 fecal coliform per 100 ml. The fecal coliform analysis in the chlorine contact chamber was lower than either the Lagoon #3 effluent or plant effluent. This could reflect the chlorination effects though the final effluent could be affected by the long underground line between the chlorine contact chamber and the final effluent point.

11. Algae experienced a healthy growth in the lagoons during the warmer weather. Algae contribute to the lagoon's waste treatment mechanism and the presence of algae is a sign that the lagoons are actively reducing wastes in the water. The reduction of algae between Lagoon #3 and the effluent is attributed to algae settling out in the under drain lines.

In summary, we note that (1) the major reduction of wastewater characteristics took place in Lagoon #1. Lagoons #2 and #3 contributed a polishing action of the wastewater that reduced the wastewater characteristics to levels that met Illinois effluent criteria, (2) the filters were operated during the first three months of the survey only, (3) chlorine addition appeared superfluous for the most part in that the unchlorinated wastewater from Lagoon #3 was meeting State effluent standards as to bacteria. This of course is not true during the warmer summer period and chlorine addition is needed at those times.

TABLE 7. AVERAGE WASTEWATER CHARACTERISTICS ACROSS LAGOON SYSTEM

MARCH 1976 THROUGH MARCH 1977

*Effluent from filters

Characteristic	Units	Influent	Lagoon #1 Effluent	Lagoon #2 Effluent	Lagoon #3 Effluent	Chlorine* Contact Chamber	Effluent
BOD_5	mg/1	473	18	10	14.5	10	4
$S\text{-}BOD_5$	mg/1	103	9	5	3	--	2
COD	mg/1	1,026	96	77	72	54	55
S-COD	mg/1	202	67	57	56	--	45
TSS	mg/1	497	42	44	29	29	21
VSS	mg/1	391	24	20	15	10	9
PO_4^{-3}, total	mg/1	37	---	---	16	--	13
N, total	mg/1	51	---	---	6.4	--	5
$N\text{-}NH_3$	mg/1	26	---	---	1.4	--	1.3
NO_2^-	mg/1	--	---	---	0.13	--	--
NO_3^-	mg/1	--	---	---	0.80	--	--
Alkalinity	mg/1	242	167	157	161	--	167
Fecal Coliform	$\frac{\text{Cells}}{\text{100 CC}}$	--	---	---	33	13	21
Algae	$\frac{\text{Cells}}{\text{100 CC}}$	--	1,200,000	690,000	580,000	--	46,000

APPENDIX A

SAMPLING EQUIPMENT

Quantity	Type
6	Scout II Automatic Samplers.
6	Auxiliary sample refrigerators, collected samples to be composited in a wide mouth container.
6	Weatherproof housings to enclose sampler refrigerator and open flow channel recorder where specified. Each housing will include a thermostatically controlled heater for winter operation, and a thermostatically controlled exhaust blower to minimize internal temperature during the summer.
1	Model J-R open channel Flow Recorder.
1	Proportional Interconnect Assembly to connect Model J-R open channel Flow Recorder witn Scout II Automatic Sampler.
1	Skid Float for measuring liquid level in Palmer Bowlus flume.
1	12" insert-type Palmer Bowlus measuring flume suitable for grouting in place in the invert of the 12" half pipe in influent manhole.
1	Dissolved oxygen probe and meter.
1	pH meter.

APPENDIX B: DAILY DATA SHEETS

Date	3/23/76						3/24/76					
Weather	SUNNY						SUNNY					
Air Temp.°C	7						11					
Wind Direction	NW						S					
Wind Speed, mph	8-10						15-20					
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.252	x	x	-	x	x	.239	x	x	-	x	x
pH, Units	-	-	-	-	-	-	-	-	-	-	-	-
Temp.°C	-	9	8	-	6	10	5	3	6	-	5	4
DO	-	4.2	4.4	-	4.0	5.0	3.2	2.8	3.0	-	2.6	2.5
Alkalinity	212	172	142	-	x	176	208	178	134	-	x	176
SS, Total	158	53	39	-	2	5	52	39	31	-	5	2
SS, Volatile	124	21	18	-	1	3	43	27	20	-	4	1
BOD, Total	290	16	8	-	5	5	230	16	9	-	4	4
BOD, Soluble	100	6	5	-	x	3	38	9	4	-	x	3
COD, Total	340	120	104	-	44	44	255	64	60	-	6	4
COD, Soluble	143	88	68	-	x	40	20	56	52	-	x	4
P, Total	19	x	x	-	x	1.3	14	x	x	-	x	1.3
N. Total	37	x	x	-	x	4.5	26	x	x	-	x	5.3
N, NH_3	16	x	x	-	x	4	17	x	x	-	x	5
N, NO_2	x	x	x	-	x	x	x	x	x	-	x	x
N, NO_3	x	x	x	-	x	x	x	x	x	-	x	x
Fecal Coliform Cells/100 ml	x	x	x	-	-	-	x	x	x	-	-	-
Algae, No./100 cc	x	-	-	-	x	-	x	-	-	-	x	4

*In mg/l unless otherwise specified. 1 mph = 1.609 km/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	3/25/76						3/26/76					
Weather	RAIN						SUNNY					
Air Temp.°C	9						16					
Wind Direction	SSW						SSW					
Wind Speed, mph	0-5						20-30					
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.270	x	x	-	x	x	.252	x	x	-	x	x
pH, Units	-	-	-	-	-	-	-	-	-	-	-	-
Temp.°C	6	3	6	-	5	5	9	6	11	-	8	8
DO	3.8	3.3	3.9	-	3.4	3.6	3.2	2.9	3.3	-	3.0	3.2
Alkalinity	216	174	134	-	x	172	220	200	135	-	x	153
SS, Total	94	61	45	-	10	9	254	42	40	-	8	13
SS, Volatile	32	18	15	-	3	2	178	7	10	-	2	6
BOD, Total	220	15	8	-	3	5	270	11	6	-	5	2
BOD, Soluble	40	10	5	-	x	4	35	6	3	-	x	1
COD, Total	243	76	84	-	4	8	542	80	76	-	20	12
COD, Soluble	56	64	76	-	x	8	80	60	48	-	x	12
P, Total	16	x	x	-	x	1.1	35	x	x	-	x	2.6
N. Total	26.5	x	x	-	x	2	32	x	x	-	x	2
N, NH_3	15	x	x	-	x	0.3	18	x	x	-	x	0.1
N, NO_2	x	x	x	-	x	x	x	x	x	-	x	x
N, NO_3	x	x	x	-	x	x	x	x	x	-	x	x
Fecal Coliform Cells/100 ml	x	x	x	-	-	-	x	x	x	-		
Algae, No./100 cc	x	-	-	-	x	-	x			-	x	

*In mg/l unless otherwise specified.   1 mph = 1.609 kg/hr   1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	3/27/76						3/28/76					
Weather	RAIN						SUNNY					
Air Temp.°C	6						9					
Wind Direction	–						SE					
Wind Speed, mph	–						10-15					
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.299	x	x	–	x	x	.291	x	x	–	x	x
pH, Units	–	–	–	–	–	–	–	–	–	–	–	–
Temp.°C	8	5	8	–	8	7	5	3	8	–	5	5
DO	3.6	4.0	3.7	–	3.9	3.5	3.1	2.7	3.0	–	2.8	2.8
Alkalinity	178	161	128	–	x	134	201	177	135	–	x	134
SS, Total	518	53	54	–	10	72	163	55	59	–	9	18
SS, Volatile	254	21	25	–	5	10	65	15	11	–	2	7
BOD, Total	420	13	7	–	2	2	50	17	5	–	2	3
BOD, Soluble	10	5	2	–	x	1	10	6	2	–	x	1
COD, Total	693	84	76	–	16	52	275	116	84	–	16	8
COD, Soluble	28	52	48	–	x	20	12	44	44	–	x	8
P, Total	67	x	x	–	x	6	8	x	x	–	x	27
N., Total	25	x	x	–	x	2.4	14	x	x	–	x	2
N, NH_3	5	x	x	–	x	0.2	5	x	x	–	x	0.25
N, NO_2	x	x	x	–	x	x	x	x	x	–	x	x
N, NO_3	x	x	x	–	x	x	x	x	x	–	x	x
Fecal Coliform Cells/100 ml	x	x	x	>16, <100	71	100	x	x	x	–	–	–
Algae, No./100 cc	x	–	–	–	x	–	x	–	–	–	x	–

*In mg/l unless otherwise specified.   1 mph = 1.609 kg/hr   1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	3/29/76											
Weather	RAIN											
Air Temp.°C	11											
Wind Direction	S											
Wind Speed, mph	5-15											
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.248	x	x	–	x	x						
pH, Units	–	–	–	–	–	–						
Temp.°C	8	6	10	–	7	7						
DO	2.5	2.5	2.7	–	2.0	1.9						
Alkalinity	272	116	132	–	x	154						
SS, Total	10	57	66	–	20	35						
SS, Volatile	3	14	26	–	4	17						
BOD, Total	150	7	16	–	2	2						
BOD, Soluble	40	4	2	–	x	1						
COD, Total	223	80	96	–	8	20						
COD, Soluble	32	60	64	–	x	16						
P, Total	7	x	x	–	x	16						
N. Total	14	x	x	–	x	4						
N, NH_3	8	x	x	–	x	2						
N, NO_2	x	x	x	–	x	x						
N, NO_3	x	x	x	–	x	x						
Fecal Coliform Cells/100 ml	x	x	x	–	–	–						
Algae, No./100 cc	x	–	–	–	x	7						

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	4/1/76						4/2/76					
Weather	Sunny						Sunny					
Air Temp.°C	4						16					
Wind Direction	NW						S					
Wind Speed, mph	10-15						5-10					
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.295	x	x	-	x	x	.270	x	x	-	x	x
pH, Units	-	-	-	-	-	-	-	-	-	-	-	-
Temp.°C	5	3	8	-	6	4	5	3	8	-	8	5
DO	1.7	1.6	1.9	-	1.2	2.9	2.1	2.0	2.1	-	2.6	2.4
Alkalinity	200	160	0.2	-	x	166	202	176	120	-	x	164
SS, Total	434	72	71	-	19	15	224	55	70	-	3	25
SS, Volatile	324	42	35	-	13	10	162	25	29	-	1	13
BOD, Total	300	18	6	-	4	4	170	15	7	-	3	4
BOD, Soluble	30	9	3	-	x	3	20	5	4	-	x	1
COD, Total	562	103	91	-	4	8	341	83	71	-	4	4
COD, Soluble	44	59	48	-	x	4	44	48	45	-	x	4
P, Total	14	x	x	-	x	0.1	11	x	x	-	x	1.3
N. Total	28.5	x	x	-	x	2.6	26	x	x	-	x	3
N, NH_3	11.6	x	x	-	x	0.1	14	x	x	-	x	0.2
N, NO_2	x	x	x	-	x	x	x	x	x	-	x	x
N, NO_3	x	x	x	-	x	x	x	x	x	-	x	x
Fecal Coliform Cells/100 ml	x	x	x	-	-	-	x	x	x	-	-	-
Algae, No./10C cc		-	-	-	x	-	x	-	-	-	x	-

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	4/3/76						4/4/76					
Weather	Sunny						Overcast					
Air Temp.°C	14						5					
Wind Direction	WSW						N					
Wind Speed, mph	10-15						15-25					
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.277	x	x	–	x	x	.270	x	x	–	x	x
pH, Units	–	–	–	–	–	–	–	–	–	–	–	–
Temp.°C	9	6	10	–	11	7	6	5	7	–	9	5
DO	2.1	2.1	2.6	–	2.8	2.3	2.0	2.1	2.0	–	2.1	2.2
Alkalinity	221	171	120	–	x	170	213	167	118	–	x	160
SS, Total	120	65	177	–	16	16	212	92	68	–	19	11
SS, Volatile	104	22	20	–	2	4	64	16	16	–	5	2
BOD, Total	270	11	4	–	2	5	140	25	3	–	2	2
BOD, Soluble	40	5	1	–	x	2	30	19	1	–	x	1
COD, Total	317	83	79	–	4	8	313	115	79	–	3	8
COD, Soluble	40	44	48	–	x	6	63	52	56	–	x	4
P, Total	16	x	x	–	x	4.6	21	x	x	–	x	4
N. Total	27.5	x	x	–	x	2	26	x	x	–	x	2
N, NH_3	14	x	x	–	x	0.05	15	x	x	–	x	0.06
N, NO_2	x	x	x	–	x	x	x	x	x	–	x	x
N, NO_3	x	x	x	–	x	x	x	x	x	–	x	x
Fecal Coliform Cells/100 ml	x	x	x	–	–	–	x	x	x	–	–	–
Algae, No./100 cc	x	–	–	–	x	–	x	–	–	–	x	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENIDX B (Continued)

Date	4/5/76						4/16/76					
Weather	sunny						sunny					
Air Temp.°C	11						13					
Wind Direction	–						SW					
Wind Speed, mph	–						8-12					
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.278	x	x	–	x	x	.276	x	x	–	x	x
pH, Units	–	–	–	–	–	–	–	–	–	–	–	–
Temp.°C	6	4	–	–	10	6	8	5	12	12	11	7
DO	1.6	2.1	–	–	2.8	1.7	2.2	1.7	–	2.2	2.1	2.2
Alkalinity	207	170	–	–	x	167	215	190	–	134	x	170
SS, Total	136	59	–	–	16	19	176	66	–	11	3	2
SS, Volatile	80	9	–	–	8	4	122	25	–	3	2	1
BOD, Total	180	12	–	–	4	5	340	16	–	2	4	4
BOD, Soluble	30	4	–	–	x	2	50	12	–	1	x	1
COD, Total	313	79	–	–	8	12	349	83	–	52	4	4
COD, Soluble	79	56	–	–	x	8	63	52	–	48	x	3
P, Total	15	x	–	–	x	0.4	19	x	x	12	x	1.1
N. Total	27.5	x	–	–	x	2.6	29.5	x	x	5	x	2
N, NH_3	15	x	–	–	x	0.1	16	x	x	0.2	x	0.06
N, NO_2	x	x	–	–	x	x	x	x	x	0.05	x	x
N, NO_3	x	x	–	–	x	x	x	x	x	3	x	x
Fecal Coliform Cells/100 ml	x	x	–	–	–	–	x	x	x	–	–	–
Algae, No./100 cc	x	–	–	–	x		x	–	–	–	x	–

*In mg/l unless otherwise specified. 1 mph - 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	4/7/76						4/8/76					
Weather	Sunny						Sunny					
Air Temp.°C	12						6					
Wind Direction	SW						NE					
Wind Speed, mph	0-5						10-15					
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.234	x	x	–	x	x	.193	x	x	–	x	x
pH, Units	–	–	–	–	–	–	–	–	–	–	–	–
Temp.°C	9	7	12	12	12	9	7	5	12	11	8	7
DO	1.8	1.3	2.7	2.6	2.6	2.3	2.6	2.0	2.7	2.4	2.3	2.4
Alkalinity	344	164	132	134	x	174	234	124	131	134	x	174
SS, Total	736	46	19	20	3	17	93	88	19	16	5	2
SS, Volatile	528	14	7	5	2	8	65	22	5	9	3	1
BOD, Total	790	11	4	6	2	18	240	14	2	3	2	3
BOD, Soluble	90	9	3	3	x	5	40	8	1	1	x	1
COD, Total	1397	71	63	56	12	20	329	83	56	52	40	8
COD, Soluble	131	60	56	48	x	12	60	48	48	48	x	8
P, Total	13	x	x	12	x	0.5	16.5	x	x	15	x	1.5
N. Total	50	x	x	3.4	x	2.6	32	x	x	5	x	3.5
N, NH_3	11	x	x	0.9	x	0.1	18	x	x	0.3	x	0.1
N, NO_2	x	x	x	0.05	x	x	x	x	x	0.05	x	x
N, NO_3	x	x	x	3	x	x	x	x	x	3	x	x
Fecal Coliform Cells/100 ml	x	x	x	3	–	–	x	x	x	–	–	–
Algae, No./100 cc	x	–	–	–	x	–	x	–	–	–	x	–

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	4/9/76						4/10/76					
Weather	overcast						sunny					
Air Temp.°C	1						10					
Wind Direction	E						-					
Wind Speed, mph	0-5						-					
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.190	x	x	-	x	x	.190	x	x	-	x	x
pH, Units	-	-	-	-	-	-	-	-	-	-	-	-
Temp.°C	6	3	11	11	10	7	-	-	-	-	-	-
DO	1.9	2.4	3.0	2.9	3.2	3.1	-	-	-	-	-	-
Alkalinity	248	124	134	138	x	172	190	122	132	136	x	176
SS, Total	368	76	16	8	2	3	148	147	32	28	6	8
SS, Volatile	286	13	5	6	1	2	122	27	11	9	3	5
BOD, Total	435	5	2	1	1	1	231	10	1	1	1	1
BOD, Soluble	68	3	1	0	x	4	54	7	2	2	x	3
COD, Total	984	75	63	60	8	4	321	103	95	60	8	36
COD, Soluble	71	52	48	48	x	4	79	91	87	56	x	36
P, Total	21.5	x	x	13.5	x	0.7	41	x	x	21.5	x	2
N. Total	32	x	x	3.7	x	1.6	22.5	x	x	29.5	x	1.2
N, NH_3	11	x	x	0.5	x	0.1	13	x	x	11	x	0.2
N, NO_2	x	x	x	0.5	x	x	x	x	x	0.05	x	x
N, NO_3	x	x	x	2.9	x	x	x	x	x	2.6	x	x
Fecal Coliform Cells/100 ml	x	x	x	-	-	-	x	x	x	-	-	-
Algae, No./100 cc	x	-	-	-	x	-	x	-	-	-	x	-

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	4/11/76											
Weather	SUNNY											
Air Temp.°C	7											
Wind Direction	NE											
Wind Speed, mph	20-30											
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.203	x	x	–	x	x						
pH, Units	–	–	–	–	–	–						
Temp.°C	–	–	–	–	–	–						
DO	–	–	–	–	–	–						
Alkalinity	138	122	132	132	x	190						
SS, Total	244	198	30	35	10	12						
SS, Volatile	188	52	12	7	3	6						
BOD, Total	150	14	5	6	1	3						
BOD, Soluble	50	8	2	4	x	2						
COD, Total	433	151	63	91	8	67						
COD, Soluble	95	91	56	87	x	28						
P, Total	36	x	x	7	x	1						
N. Total	2.5	x	x	4	x	1.3						
N, NH_3	0.5	x	x	0.7	x	0.1						
N, NO_2	x	x	x	0.05	x	x						
N, NO_3	x	x	x	2.8	x	x						
Fecal Coliform Cells/100 ml	x	x	x	–	–	–						
Algae, No./100 cc	x	–	–	–	x	–						

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	4/12/76						4/13/76					
Weather	sunny						sunny					
Air Temp.°C	2						7					
Wind Direction	E						E					
Wind Speed, mph	5-10						5-10					
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.176	x	x	–	x	x	.192	x	x	–	x	x
pH, Units	–	–	–	–	–	–	–	–	–	–	–	–
Temp.°C	–	–	–	–	–	–	–	–	–	–	–	–
DO	–	–	–	–	–	–	–	–	–	–	–	–
Alkalinity	244	117	125	136	x	170	238	118	132	130	x	168
SS, Total	224	115	32	26	10	11	302	33	11	17	2	1
SS, Volatile	193	33	14	8	5	2	248	13	9	14	1	0
BOD, Total	270	12	2	2	1	2	370	7	2	3	1	1
BOD, Soluble	60	6	1	1	x	1	60	3	1	1	x	0
COD, Total	344	52	64	60	2	16	524	72	64	36	2	8
COD, Soluble	60	48	48	60	x	12	64	52	52	36	x	8
P, Total	77	x	x	15	x	3.5	7	x	x	13	x	0.7
N. Total	27.5	x	x	5	x	1.5	24	x	x	4.5	x	0.8
N, NH_3	15.5	x	x	0.4	x	0.1	11	x	x	0.3	x	0.1
N, NO_2	x	x	x	0.05	x	x	x	x	x	0.05	x	x
N, NO_3	x	x	x	2.6	x	x	x	x	x	2.4	x	x
Fecal Coliform Cells/100 ml	x	x	x	1	<1	15	x	x	x	–	–	–
Algae, No./100 cc	x	300	100	400	x	2	x	–	–	–	x	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	4/14/76						4/15/76					
Weather	OVERCAST						SUNNY					
Air Temp.°C	16						20					
Wind Direction	S						-					
Wind Speed, mph	10-15						-					
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.197	x	x	-	x	x	.185	x	x	-	x	x
pH, Units	-	-	-	-	-	-	-	-	-	-	-	-
Temp.°C	-	-	-	-	-	-	-	-	-	-	-	-
DO	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity	215	126	130	129	x	168	236	148	138	136	x	182
SS, Total	178	77	24	24	4	2	136	61	34	24	1	1
SS, Volatile	128	17	8	6	2	1	94	15	14	11	0	0
BOD, Total	200	12	3	2	1	1	130	13	8	4	1	1
BOD, Soluble	30	5	1	1	x	0	20	5	3	3	x	0
COD, Total	340	96	56	60	16	12	224	84	72	48	8	8
COD, Soluble	40	64	56	60	x	12	72	76	56	48	x	8
P, Total	10	x	x	4	x	0.7	9.5	x	x	5.4	x	1.7
N. Total	23	x	x	4	x	2	21	x	x	3.5	x	1
N, NH_3	10.5	x	x	0.4	x	0.2	10	x	x	0.5	x	0.3
N, NO_2	x	x	x	0.05	x	x	x	x	x	0.05	x	x
N, NO_3	x	x	x	1.5	x	x	x	x	x	1.4	x	x
Fecal Coliform Cells/100 ml	x	x	x	1	<1	<1	x	x	x	<1	<1	<1
Algae, No./10C cc	x	-	-	-	x	-	x	-	-	-	x	-

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	4/16/76						4/17/76					
Weather	sunny						sunny					
Air Temp.°C	21						22					
Wind Direction	S						S					
Wind Speed, mph	20-30						15-20					
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.189	x	x	-	x	x	.184	x	x	-	x	x
pH, Units	-	-	-	-	-	-	-	-	-	-	-	-
Temp.°C	-	-	-	-	-	-	-	-	-	-	-	-
DO	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity	214	144	134	298	x	188	-	132	130	134	x	152
SS, Total	84	10	9	16	7	23	-	41	42	16	2	17
SS, Volatile	66	6	4	12	4	5	-	20	24	7	1	6
BOD, Total	120	11	11	4	1	2	-	9	14	4	1	4
BOD, Soluble	50	6	3	2	x	1	-	4	2	1	x	1
COD, Total	416	64	52	56	8	24	-	72	72	60	24	36
COD, Soluble	76	52	48	44	x	20	-	52	48	44	x	28
P, Total	97	x	x	16.5	x	7.5	-	x	x	25.5	x	2.9
N. Total	19	x	x	5	x	2.3	-	x	x	4.3	x	3.4
N, NH_3	12.6	x	x	0.6	x	0.5	-	x	x	0.6	x	0.5
N, NO_2	x	x	x	-	x	x	-	x	x	0.04	x	x
N, NO_3	x	x	x	1.3	x	x	-	x	x	1.1	x	x
Fecal Coliform Cells/100 ml	x	x	x	<1	49	<1	-	x	x	<1	<1	<1
Algae, No./100 cc	x	-	-	-	-	-	-	-	-	-	-	-

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	4/18/76											
Weather	-											
Air Temp.°C	-											
Wind Direction	-											
Wind Speed, mph	-											
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.190	x	x	-	x	x						
pH, Units	-	-	-	-	-	-						
Temp.°C	-	-	-	-	-	-						
DO	-	-	-	-	-	-						
Alkalinity	-	132	130	132	x	148						
SS, Total	-	35	21	14	2	20						
SS, Volatile	-	15	9	10	1	13						
BOD, Total	-	14	7	3	1	1						
BOD, Soluble	-	6	2	2	x	1						
COD, Total	-	88	68	60	20	4						
COD, Soluble	-	64	60	52	x	1						
P, Total	-	x	x	11	x	6						
N. Total	-	x	x	3.7	x	3.9						
N, NH_3	-	x	x	0.6	x	0.4						
N, NO_2	x	x	x	0.03	x	x						
N, NO_3	x	x	x	1	x	x						
Fecal Coliform Cells/100 ml	x	x	x	<1	<1	<1						
Algae, No./100 cc	x	-	-	-	x	-						

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	4/19/76						4/20/76					
Weather	SUNNY						SUNNY					
Air Temp.°C	21						13					
Wind Direction	S						ENE					
Wind Speed, mph	10-15						0-10					
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.174	x	x	-	x	x	.189	x	x	-	x	x
pH, Units	-	-	-	-	-	-	-	-	-	-	-	-
Temp.°C	-	-	-	-	-	-	-	-	-	-	-	-
DO	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity	240	132	128	130	x	156	-	128	130	130	x	156
SS, Total	55	27	41	12	4	54	-	23	32	10	2	17
SS, Volatile	45	19	27	10	2	8	-	11	13	8	1	6
BOD, Total	250	13	14	11	3	3	-	12	12	5	1	23
BOD, Soluble	80	8	6	5	x	2	-	8	6	2	x	2
COD, Total	424	88	80	56	36	48	-	81	77	40	40	32
COD, Soluble	96	52	60	44	x	36	-	65	60	40	x	28
P, Total	27	x	x	9.4	x	6.1	-	x	x	11.6	x	5.7
N. Total	29	x	x	3.5	x	3.4	-	x	x	3.6	x	2.5
N, NH_3	15.6	x	x	0.6	x	0.6	-	x	x	0.4	x	0.3
N, NO_2	x	x	x	0.03	x	x	x	x	x	0.04	x	x
N, NO_3	x	x	x	1.1	x	x	x	x	x	1.1	x	x
Fecal Coliform Cells/100 ml	x	x	x	-	-	-	x	x	x	8	2	8
Algae, No./100 cc	x	300	200	600	x	4	x	-	-	-	x	-

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	4/21/76						4/22/76					
Weather	1½" RAIN						RAIN					
Air Temp.°C	13						14					
Wind Direction	-						SSW					
Wind Speed, mph	-						10-15					
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.188	x	x	0.0001	x	x	.189	x	x	0.0003	x	x
pH, Units	-	-	-	-	-	-	-	-	-	-	-	-
Temp.°C	-	-	-	-	-	-	-	-	-	-	-	-
DO	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity	232	128	126	130	x	174	220	130	124	130	x	162
SS, Total	378	29	22	15	30	5	154	22	30	6	6	2
SS, Volatile	284	21	19	12	10	3	127	8	20	3	4	1
BOD, Total	380	16	11	6	2	4	430	14	12	4	2	1
BOD, Soluble	20	9	4	2	x	2	80	4	2	2	x	1
COD, Total	569	89	77	52	20	20	310	77	81	60	20	16
COD, Soluble	85	85	48	52	x	16	152	56	60	56	x	16
P, Total	27	x	x	8.2	x	3	16	x	x	8.1	x	2
N. Total	33	x	x	7.6	x	2.8	44	x	x	4.9	x	3
N, NH_3	15.6	x	x	0.4	x	0.2	10.5	x	x	0.3	x	0.1
N, NO_2	x	x	x	0.04	x	x	x	x	x	0.03	x	x
N, NO_3	x	x	x	1	x	x	x	x	x	0.95	x	x
Fecal Coliform Cells/100 ml	x	x	x	9	200	-	x	x	x	14	200	<1
Algae, No./100 cc	x	-	-	-	x	-	x	-	-	-	x	-

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	4/23/76						4/24/76					
Weather	sunny						-					
Air Temp.°C	14						-					
Wind Direction	SSW						-					
Wind Speed, mph	5-10						-					
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.186	x	x	0.0006	x	x	.184	x	x	0.0015	x	x
pH, Units	-	-	-	-	-	-	-	-	-	-	-	-
Temp.°C	-	-	-	-	-	-	-	-	-	-	-	-
DO	-	-	-	-	-	-	-	-	-	-	-	-
							-	-	-	-	-	-
Alkalinity	240	142	126	134	x	202	230	130	136	132	x	206
SS, Total	50	15	21	11	2	3	184	14	27	7	4	9
SS, Volatile	38	9	13	8	1	1	176	8	14	4	2	5
BOD, Total	420	12	5	7	1	1	121	10	9	7	1	1
BOD, Soluble	100	7	4	2	x	1	60	5	3	1	x	1
COD, Total	476	77	85	56	20	4	165	73	77	60	12	12
COD, Soluble	109	60	56	56	x	4	69	65	65	60	x	12
P, Total	21	x	x	8	x	2.1	15	x	x	7.6	x	1.1
N. Total	45	x	x	1	x	2.2	24	x	x	1.3	x	1.6
N, NH_3	16	x	x	0.3	x	0.1	15	x	x	0.4	x	0.1
N, NO_2	x	x	x	0.035	x	x	x	x	x	0.035	x	x
N, NO_3	x	x	x	0.8	x	x	x	x	x	0.7	x	x
Fecal Coliform Cells/100 ml	x	x	x	<1	12	12	x	x	x	5	2	5
Algae, No./100 cc	x	-	-	-	-	x	x	-	-	-	x	-

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	4/25/76											
Weather	overcast											
Air Temp.°C	8											
Wind Direction	-											
Wind Speed, mph	-											
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.193	x	x	0.003	x	x						
pH, Units	-	-	-	-	-	-						
Temp.°C	-	-	-	-	-	-						
DO	-	-	-	-	-	-						
Alkalinity	236	132	130	132	x	138						
SS, Total	382	33	32	19	2	2						
SS, Volatile	352	26	24	7	1	1						
BOD, Total	242	9	7	2	1	1						
BOD, Soluble	64	3	2	1	x	1						
COD, Total	323	77	77	60	16	4						
COD, Soluble	69	73	77	60	x	4						
P, Total	15	73	x	8.1	x	0.7						
N. Total	23	x	x	0.9	x	1.5						
N, NH_3	13	x	x	0.4	x	0.2						
N, NO_2	x	x	x	0.035	x	x						
N, NO_3	x	x	x	0.8	x	x						
Fecal Coliform Cells/100 ml	x	x	x	7	15	3						
Algae, No./100 cc	x	-	-	-	x	-						

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	4/26/76						4/27/76					
Weather	SUNNY						OVERCAST					
Air Temp.°C	3						3					
Wind Direction	–						–					
Wind Speed, mph	–						–					
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.187	×	×	0.0027	×	×	.183	×	×	0.003	×	×
pH, Units	–	–	–	–	–	–	–	–	–	–	–	–
Temp.°C	–	–	–	–	–	–	–	–	–	–	–	–
DO	–	–	–	–	–	–	–	–	–	–	–	–
Alkalinity	220	136	128	128	×	206	238	130	130	134	×	210
SS, Total	166	27	28	13	3	2	246	16	28	5	3	3
SS, Volatile	126	23	18	6	2	1	200	4	23	3	2	2
BOD, Total	220	7	8	6	1	1	270	7	6	7	1	1
BOD, Soluble	60	5	6	2	×	0	80	5	2	3	×	0
COD, Total	439	81	77	56	20	8	391	81	73	65	20	8
COD, Soluble	133	44	77	52	×	8	105	56	52	65	×	8
P, Total	24	×	×	6.6	×	0.9	21	×	×	8.1	×	0.6
N. Total	28.4	×	×	1.1	×	1.4	25	×	×	5.1	×	1.2
N, NH_3	18.4	×	×	0.3	×	0.1	14.3	×	×	0.4	×	0.1
N, NO_2	×	×	×	0.035	×	×	×	×	×	0.039	×	×
N, NO_3	×	×	×	0.7	×	×	×	×	×	1.7	×	×
Fecal Coliform Cells/100 ml	×	×	×	33	65	2	×	×	×	2	54	1
Algae, No./100 cc	×	0.98*	0.98*	0.27*	×	490	×	–	–	–	×	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

*Multiply by 10^6

APPENDIX B (Continued)

Date	4/28/76						4/29/76					
Weather	overcast						sunny					
Air Temp.°C	4						7					
Wind Direction	E						–					
Wind Speed, mph	5-10						–					
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.177	x	x	0.003	x	x	.180	x	x	0.0037	x	x
pH, Units	–	–	–	–	–	–	–	–	–	–	–	–
Temp.°C	–	–	–	–	–	–	–	–	–	–	–	–
DO	–	–	–	–	–	–	–	–	–	–	–	–
Alkalinity	244	140	136	134	x	214	262	134	128	132	x	222
SS, Total	288	17	33	6	8	2	446	37	19	11	5	3
SS, Volatile	248	12	19	4	5	1	402	24	11	5	3	2
BOD, Total	260	7	6	4	1	1	330	11	6	3	1	1
BOD, Soluble	90	3	2	2	x	0	120	6	2	1	x	0
COD, Total	472	65	81	48	32	8	577	77	69	56	8	12
COD, Soluble	96	48	48	48	x	8	129	73	65	52	x	12
P, Total	18	x	x	6.6	x	0.5	24	x	x	6.6	x	0.4
N. Total	30	x	x	5.2	x	3.1	42	x	x	5.7	x	2.6
N, NH_3	16	x	x	0.4	x	0.03	16.6	x	x	0.3	x	0.3
N, NO_2	x	x	x	0.03	x	x	x	x	x	0.17	x	x
N, NO_3	x	x	x	0.5	x	x	x	x	x	0.37	x	x
Fecal Coliform Cells/100 ml	x	x	x	1	1	1	x	x	x	16	30	7
Algae, No./100 cc	x	–	–	–	x	–	x	–	–	–	x	–

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	4/30/76											
Weather	Sunny											
Air Temp.°C	7											
Wind Direction	—											
Wind Speed, mph	—											
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.183	×	×	0.0062	×	×						
pH, Units	—	—	—	—	—	—						
Temp.°C	—	—	—	—	—	—						
DO	—	—	—	—	—	—						
Alkalinity	244	382	138	140	×	220						
SS, Total	216	69	26	16	2	2						
SS, Volatile	202	40	18	7	1	1						
BOD, Total	214	35	7	2	1	1						
BOD, Soluble	88	15	5	1	×	0						
COD, Total	222	145	77	60	12	4						
COD, Soluble	109	97	73	60	×	4						
P, Total	19	×	×	8.8	×	0.3						
N. Total	29	×	×	4.4	×	1.7						
N, NH_3	10.5	×	×	0.3	×	0.2						
N, NO_2	×	×	×	0.085	×	×						
N, NO_3	×	×	×	0.11	×	×						
Fecal Coliform Cells/100 ml	×	×	×	<1	10	<1						
Algae, No./100 cc	×	—	—	—	×	—						

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	5/17/76						5/18/76					
Weather	RAIN						SUNNY					
Air Temp.°C	12						9					
Wind Direction	-						NNE					
Wind Speed, mph	-						5-10					
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.225	x	x	0	x	x	.229	x	x	0.009	x	x
pH, Units	-	-	-	-	-	-	7.5	8.7	9.3	9.3	7.9	9.0
Temp.°C	-	-	-	-	-	-	13	10	10	11	10	15
DO	-	-	-	-	-	-	0.02	3.5	4.3	4.1	4.2	4.2
Alkalinity	284	152	134	139	x	140	242	154	128	132	x	132
SS, Total	206	60	40	22	90	133	226	25	10	7	49	44
SS, Volatile	148	31	23	7	17	10	164	12	4	5	5	4
BOD, Total	330	34	31	6	8	6	380	34	15	3	19	5
BOD, Soluble	70	29	23	2	x	3	70	8	3	2	x	2
COD, Total	592	232	116	68	72	56	756	124	92	80	88	56
COD, Soluble	208	212	108	68	x	52	152	100	64	80	x	56
P, Total	23	x	x	4.1	x	3	28	x	x	4.1	x	3.7
N. Total	52	x	x	3.6	x	3.9	46	x	x	5.8	x	5.7
N, NH_3	30	x	x	0.3	x	0.3	13.5	x	x	0.4	x	0.4
N, NO_2	x	x	x	0.007	x	x	x	x	x	0.019	x	x
N, NO_3	x	x	x	0.46	x	x	x	x	x	2.1	x	x
Fecal Coliform Cells/100 ml	x	x	x	8	<1	<1	x	x	x	120	7	95
Algae, No./100 cc	x	390*	150*	5.9*	x	15 *	x	-	-	-	x	-

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

*Multiply by 10^6

APPENDIX B (Continued)

Date	5/19/76						5/20/77					
Weather	SUNNY						SUNNY					
Air Temp.°C	13						–					
Wind Direction	SSW						–					
Wind Speed, mph	10-15						–					
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.229	×	×	0.011	×	×	.229	×	×	0.013	×	×
pH, Units	7.3	8.5	9.1	9.3	8.1	9.0	–	–	–	–	–	–
Temp.°C	13	11	12	12	15	16	–	–	–	–	–	–
DO	0.03	2.6	3.1	3.8	3.5	3.1	–	–	–	–	–	–
Alkalinity	230	152	134	134	×	132	240	142	130	72	×	131
SS, Total	306	35	6	14	48	45	490	69	28	25	57	34
SS, Volatile	216	30	3	12	14	27	426	57	24	16	9	20
BOD, Total	640	34	15	13	4	8	530	29	17	8	1	6
BOD, Soluble	70	19	9	5	×	3	120	23	4	5	×	2
COD, Total	1072	132	80	68	28	60	848	148	64	56	32	44
COD, Soluble	188	68	56	68	×	60	148	68	60	56	×	44
P, Total	28	×	×	4.4	×	3	30	×	×	3.3	×	3.1
N. Total	48	×	×	4	×	4	50	×	×	3.7	×	4
N, NH$_3$	12.5	×	×	0.4	×	0.4	19	×	×	0.2	×	0.3
N, NO$_2$	×	×	×	0.019	×	×	×	×	×	0.059	×	×
N, NO$_3$	×	×	×	1.8	×	×	×	×	×	1.0	×	×
Fecal Coliform Cells/100 ml	×	×	×	3	8	140	×	×	×	8	110	44
Algae, No./100 cc	×	–	–	–	×	–	×	–	–	–	×	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	5/21/76						5/22/76					
Weather	overcast						Sunny					
Air Temp.°C	13						17					
Wind Direction	W						–					
Wind Speed, mph	5-10						–					
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.222	x	x	0.018	x	x	.229	x	x	0.024	x	x
pH, Units	7.3	7.5	8.8	9.4	8.2	9.1	–	–	–	–	–	–
Temp.°C	17	16	16	14	15	18	–	–	–	–	–	–
DO	0.02	2.0	2.5	3.5	3.2	3.1	–	–	–	–	–	–
Alkalinity	232	138	130	133	x	127	230	142	136	132	x	121
SS, Total	436	48	32	37	89	41	420	39	31	38	367	39
SS, Volatile	368	33	17	18	9	21	342	31	15	22	37	11
BOD, Total	396	36	13	10	4	7	440	33	14	10	21	6
BOD, Soluble	88	11	4	3	x	4	77	14	6	4	x	4
COD, Total	636	100	64	72	36	56	569	96	69	81	77	54
COD, Soluble	148	68	52	56	x	52	81	54	42	50	x	46
P, Total	30	x	x	4.2	x	2.9	23	x	x	4.4	x	2.7
N. Total	48	x	x	5.2	x	5.5	39	x	x	3.9	x	5.8
N, NH_3	23	x	x	0.5	x	0.4	21	x	x	0.5	x	0.4
N, NO_2	x	x	x	0.016	x	x	x	x	x	0.015	x	x
N, NO_3	x	x	x	0.65	x	x	x	x	x	0.5	x	x
Fecal Coliform Cells/100 ml	x	x	x	<1	55	16	x	x	x	2	80	140
Algae, No./100 cc	x	–	–	–	x	–	x	–	–	–	x	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	5/23/76											
Weather	SUNNY											
Air Temp.°C	16											
Wind Direction	–											
Wind Speed, mph	–											
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.226	x	x	0.031	x	x						
pH, Units	–	–	–	–	–	–						
Temp.°C	–	–	–	–	–	–						
DO	–	–	–	–	–	–						
Alkalinity	238	144	137	134	x	130						
SS, Total	510	81	32	43	170	27						
SS, Volatile	436	36	17	29	20	15						
BOD, Total	560	29	12	9	4	2						
BOD, Soluble	30	13	5	3	x	1						
COD, Total	800	85	54	77	46	46						
COD, Soluble	100	50	27	46	x	38						
P, Total	25	x	x	4.2	x	2.8						
N. Total	45	x	x	6.1	x	6.1						
N, NH_3	23	x	x	0.4	x	0.4						
N, NO_2	x	x	x	0.011	x	x						
N, NO_3	x	x	x	0.48	x	x						
Fecal Coliform Cells/100 ml	x	x	x	2	55	35						
Algae, No./10C cc	x	–	–	–	x	x						

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	6/14/76						6/15/76					
Weather	SUNNY						OVERCAST					
Air Temp.°C	24						24					
Wind Direction	S						S					
Wind Speed, mph	8-10						10-15					
Elect. Power, kw/hr	–						–					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.215	x	x	–	x	x	.213	x	x	–	x	x
pH, Units	6.8	6.7	6.9	8.3	6.9	6.8	6.6	6.7	6.9	7.5	7.2	7.4
Temp.°C	19	22	21	24	22	22	18	16	19	20	22	22
DO	0.02	1.0	1.3	4.0	2.9	2.7	0.03	1.5	2.5	0.06	3.2	3.3
Alkalinity	264	180	178	154	x	–	266	174	182	166	x	178
SS, Total	492	28	10	21	2	19	736	25	11	42	4	60
SS, Volatile	410	14	6	12	1	10	618	20	7	34	2	18
BOD, Total	570	23	15	3	1	2	700	25	5	19	1	1
BOD, Soluble	120	16	4	1	x	1	100	16	2	7	x	1
COD, Total	1189	179	118	159	81	–	1596	90	53	122	73	228
COD, Soluble	301	151	114	155	x	–	285	53	53	57	x	155
P, Total	37	x	x	6.1	x	–	33	x	x	8.0	x	4.3
N. Total	52	x	x	6.8	x	–	48	x	x	6.5	x	3.3
N, NH$_3$	44	x	x	0.5	x	–	32	x	x	1.0	x	0.3
N, NO$_2$	x	x	x	0.042	x	x	x	x	x	0.011	x	x
N, NO$_3$	x	x	x	0.7	x	x	x	x	x	0.4	x	x
Fecal Coliform Cells/100 ml	x	x	x	5	<1	<1	x	x	x	10	<1	<1
Algae, No./100 cc	x	0.63✱	0.15✱	0.8✱	x		x				x	

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

✱Multiply by 10^6

APPENDIX B (Continued)

Date	6/16/76						6/17/76					
Weather	sunny						sunny					
Air Temp.°C	19						24					
Wind Direction	W						S					
Wind Speed, mph	10-15						5-10					
Elect. Power, kw/hr	80						90					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.205	x	x	—	x	x	.211	x	x	—	x	x
pH, Units	6.5	6.8	6.8	7.5	7.9	7.9	6.6	6.9	6.9	7.5	8.0	7.6
Temp.°C	11	18	17	18	21	21	17	19	19	19	22	21
DO	0.03	2.4	2.7	0.09	3.4	3.3	0.02	2.4	2.7	1.2	3.0	3.1
Alkalinity	280	180	190	172	x	226	338	176	172	164	x	166
SS, Total	458	45	5	23	23	11	590	29	10	23	17	40
SS, Volatile	378	33	3	17	10	4	482	21	4	16	5	13
BOD, Total	420	23	2	19	1	1	640	19	3	9	1	2
BOD, Soluble	10	2	1	4	x	1	120	16	1	3	x	1
COD, Total	1010	106	51	98	69	33	973	110	59	75	73	71
COD, Soluble	265	53	39	59	x	33	193	47	55	43	x	47
P, Total	25	x	x	6.1	x	2.7	29	x	x	7.4	x	3.6
N. Total	45	x	x	5.3	x	1.7	48	x	x	4.8	x	3.3
N, NH_3	32	x	x	0.5	x	0.1	30	x	x	0.7	x	1.8
N, NO_2	x	x	x	0.015	x	x	x	x	x	0.015	x	x
N, NO_3	x	x	x	1.3	x	x	x	x	x	1.1	x	x
Fecal Coliform Cells/100 ml	x	x	x	22	<1	<1	x	x	<	690	<1	13
Algae, No./100 cc	x				x		x				x	

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	6/18/76						6/19/76					
Weather	RAIN						SUNNY					
Air Temp.°C	26						16					
Wind Direction	–						–					
Wind Speed, mph	–						–					
Elect. Power, kw/hr	90						100					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.203	x	x	–	x	x	.233	x	x	0.0015	x	x
pH, Units	7.1	7.4	7.5	8.2	8.1	8.1	7.1	7.4	7.4	8.5	7.5	7.5
Temp.°C	18	20	20	18	22	21	17	18	17	17	20	21
DO	0.01	1.8	2.5	1.8	2.5	2.9	0.3	2.0	2.5	3.4	3.0	3.2
Alkalinity	292	182	180	76	x	184	254	172	166	162	x	192
SS, Total	356	52	16	15	26	19	762	45	17	19	2	9
SS, Volatile	326	41	5	13	23	8	582	32	7	15	1	6
BOD, Total	250	16	6	4	4	10	360	19	5	7	1	1
BOD, Soluble	80	6	1	2	x	3	80	8	3	4	x	0
COD, Total	956	95	47	65	59	40	1356	103	63	77	32	38
COD, Soluble	217	40	43	28	x	32	138	47	51	55	x	36
P, Total	35	x	x	3.9	x	3.0	26	x	x	6.9	x	3.9
N. Total	58	x	x	2.75	x	2.5	48	x	x	5.0	x	1.3
N, NH_3	34	x	x	0.3	x	0.7	22	x	x	0.6	x	0.5
N, NO_2	x	x	x	0.026	x	x	x	x	x	0.015	x	x
N, NO_3	x	x	x	0.3	x	x	x	x	x	1.0	x	x
Fecal Coliform Cells/100 ml	x	x	x	390	<1	<1	x	x	x	12	19	38
Algae, No./100 cc	x				x		x				x	

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	6/20/76											
Weather	sunny											
Air Temp.°C	12											
Wind Direction	SSW											
Wind Speed, mph	0-5											
Elect. Power, kw/hr	95											
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.216	x	x	0.003	x	x						
pH, Units	7.0	7.2	7.2	8.2	8.1	8.1						
Temp.°C	12	17	16	16	20	20						
DO	0.2	1.5	1.9	3.0	3.1	3.7						
Alkalinity	244	180	172	162	x	168						
SS, Total	412	62	9	21	12	7						
SS, Volatile	340	42	4	14	5	4						
BOD, Total	350	15	4	8	19	1						
BOD, Soluble	110	7	3	3	x	0						
COD, Total	948	111	51	75	59	55						
COD, Soluble	221	47	45	47	x	47						
P, Total	35	x	x	7.7	x	7.2						
N. Total	46	x	x	4.0	x	1.5						
N, NH_3	26	x	x	0.6	x	0.5						
N, NO_2	x	x	x	0.024	x	x						
N, NO_3	x	x	x	0.9	x	x						
Fecal Coliform Cells/100 ml	x	x	x	18	390	290						
Algae, No./100 cc	x				x							

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	7/1/76						7/2/76					
Weather	SUNNY						RAIN					
Air Temp.°C	17						16					
Wind Direction	NNW						S					
Wind Speed, mph	5-10						0-5					
Elect. Power, kw/hr	–						70					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.218	x	x	0.024	x	x	.207	x	x	0.031	x	x
pH, Units	7.2	7.1	8.2	8.0	7.7	8.0	7.1	7.1	8.0	7.8	7.8	7.9
Temp.°C	16	21	23	18	23	23	16	21	23	19	24	23
DO	0.2	1.3	3.2	3.8	3.4	3.0	0.2	1.4	2.9	3.1	2.5	2.8
Alkalinity	322	154	152	124	x	152	214	162	164	166	x	170
SS, Total	644	49	15	12	4	9	587	56	20	22	8	13
SS, Volatile	481	36	6	10	2	7	408	41	8	11	5	6
BOD, Total	200	31	8	10	6	10	393	7	5	7	1	4
BOD, Soluble	90	20	2	3	x	4	122	4	4	3	x	2
COD, Total	351	65	53	53	33	49	441	74	90	70	73	237
COD, Soluble	188	53	45	49	x	37	233	45	57	65	x	135
P, Total	29	x	x	12	x	12	24	x	x	14	x	13
N. Total	30	x	x	8.5	x	8.0	75	x	x	7.2	x	5.6
N, NH_3	23.5	x	x	1.0	x	0.8	19	x	x	1.1	x	0.9
N, NO_2	x	x	x	0.32	x	x	x	x	x	0.28	x	x
N, NO_3	x	x	x	0.6	x	x	x	x	x	0.57	x	x
Fecal Coliform Cells/100 ml	x	x	x	120	100	390	x	x	x	<1	23	130
Algae, No./100 cc	x	–	–	–	x	–	x	–	–	–	x	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	7/3/76						7/4/76					
Weather	RAIN AND FOG						SUNNY					
Air Temp.°C	19						18					
Wind Direction	SE						-					
Wind Speed, mph	0-5						-					
Elect. Power, kw/hr	90						80					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.216	x	x	0.031	x	x	.218	x	x	0.031	x	x
pH, Units	6.9	7.2	7.6	7.7	7.5	7.8	7.0	7.2	7.7	7.8	7.7	7.9
Temp.°C	16	20	23	18	23	23	16	21	24	19	24	24
DO	0.3	1.3	2.4	3.3	2.8	3.1	0.3	1.7	3.1	3.2	3.4	3.5
Alkalinity	232	168	160	162	x	164	222	152	156	162	x	156
SS, Total	500	43	14	19	9	8	538	58	12	13	4	3
SS, Volatile	366	29	8	12	7	6	410	41	7	7	2	1
BOD, Total	272	11	3	4	1	4	426	24	4	10	1	1
BOD, Soluble	150	5	2	3	x	1	136	11	3	4	x	3
COD, Total	465	90	57	69	49	65	449	65	69	65	20	57
COD, Soluble	241	82	50	65	x	61	228	57	65	61	x	49
P, Total	29	x	x	19	x	13	32	x	x	14.5	x	14
N. Total	45	x	x	7.5	x	6.0	55	x	x	6.4	x	4.8
N, NH_3	19	x	x	1.1	x	0.9	17	x	x	1.1	x	0.9
N, NO_2	x	x	x	0.35	x	x	x	x	x	0.43	x	x
N, NO_3	x	x	x	0.62	x	x	x	x	x	0.69	x	x
Fecal Coliform Cells/100 ml	x	x	x	11	2	71	x	x	x	200	43	54
Algae, No./100 cc	x	-	-	-	x	-	x	-	-	-	x	-

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	7/5/76						7/6/76					
Weather	Sunny						Sunny					
Air Temp.°C	22						18					
Wind Direction	–						–					
Wind Speed, mph	–						–					
Elect. Power, kw/hr	70						90					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.189	x	x	0.031	x	x	.204	x	x	0.031	x	x
pH, Units	7.3	7.3	7.8	7.6	8.1	7.9	7.0	7.2	7.6	7.8	8.2	7.9
Temp.°C	16	21	23	19	24	23	20	20	21	20	25	24
DO	0.2	1.5	2.5	3.3	3.7	3.5	0.3	2.5	2.8	3.2	3.3	3.3
Alkalinity	244	154	150	174	x	162	234	160	164	168	x	162
SS, Total	362	32	9	11	5	6	522	47	16	21	7	8
SS, Volatile	262	18	4	7	2	2	384	35	9	15	3	4
BOD, Total	326	28	4	4	1	3	490	21	3	4	2	3
BOD, Soluble	82	21	2	2	x	1	136	19	2	2	x	1
COD, Total	922	86	61	86	61	65	1469	94	139	90	73	57
COD, Soluble	163	78	57	82	x	57	237	78	78	82	x	49
P, Total	30	x	x	15	x	14	45	x	x	15	x	14
N. Total	50	x	x	5.4	x	4.2	58	x	x	7	x	3.3
N, NH_3	31	x	x	1.2	x	0.7	30	x	x	1.3	x	.99
N, NO_2	x	x	x	.49	x	x	x	x	x	.68	x	x
N, NO_3	x	x	x	.67	x	x	x	x	x	.71	x	x
Fecal Coliform Cells/100 ml	x	x	x	8	37	3	x	x	x	94	<1	130
Algae, No./100 cc	x	5.9✱	0.98✱	0.98✱	x	3.9✱	x	–	–	–	x	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

✱Multiply by 10^6

APPENDIX B (Continued)

Date	7/7/76						7/8/76					
Weather	Overcast						Sunny					
Air Temp.°C	14						22					
Wind Direction	SW						W					
Wind Speed, mph	0-10						0-5					
Elect. Power, kw/hr	90						90					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.203	x	x	0.031	x	x	.198	x	x	0.031	x	x
pH, Units	6.9	6.9	7.5	7.7	7.8	7.6	7.0	7.0	7.7	7.6	7.6	7.7
Temp.°C	16	22	24	21	24	24	18	24	25	22	25	26
DO	0.3	1.5	2.5	3.1	2.5	3.0	0.1	1.5	2.3	2.9	2.5	2.6
Alkalinity	210	152	166	168	x	164	264	156	166	164	x	166
SS, Total	476	33	8	11	4	14	443	52	12	21	18	16
SS, Volatile	364	18	3	6	1	5	353	41	5	13	5	7
BOD, Total	385	18	8	8	4	9	187	20	13	12	10	17
BOD, Soluble	110	15	5	6	x	7	110	13	11	11	x	12
COD, Total	1151	118	86	114	53	82	1167	106	76	102	118	86
COD, Soluble	245	94	78	69	x	78	265	73	73	73	x	69
P, Total	41	x	x	15	x	12	39	x	x	15	x	13
N. Total	32	x	x	5.2	x	2.8	50	x	x	7.7	x	13
N, NH_3	23	x	x	1.1	x	0.7	20	x	x	1.0	x	6.4
N, NO_2	x	x	x	.89	x	x	x	x	x	1.0	x	x
N, NO_3	x	x	x	.77	x	x	x	x	x	.97	x	x
Fecal Coliform Cells/100 ml	x	x	x	—	—	—	x	x	x	63	500	590
Algae, No./100 cc	x	—	—	—	x	—	x	—	—	—	x	—

*In mg/l unless otherwise specified.   1 mph = 1.609 kg/hr   1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	7/9/76						7/10/76					
Weather	Sunny						Sunny					
Air Temp.°C	24						28					
Wind Direction	-						SW					
Wind Speed, mph	-						5-10					
Elect. Power, kw/hr	65						90					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.201	x	x	0.031	x	x	.209	x	x	0.031	x	x
pH, Units	-	6.9	7.6	7.6	7.5	7.7	-	7.0	7.6	7.8	7.9	7.5
Temp.°C	-	24	26	25	25	26	-	24	26	24	26	27
DO	-	1.2	2.5	2.8	2.4	2.5	-	1.3	2.2	2.6	2.6	3.0
Alkalinity	-	154	168	164	x	164	-	160	164	170	x	162
SS, Total	-	51	7	16	9	2	-	58	10	15	7	6
SS, Volatile	-	39	2	6	5	1	-	37	6	9	4	2
BOD, Total	-	11	2	5	1	3	-	10	5	5	1	1
BOD, Soluble	-	8	1	3	x	2	-	8	4	3	x	1
COD, Total	-	106	65	102	61	69	-	81	73	61	41	106
COD, Soluble	-	69	45	61	x	65	-	53	57	49	x	57
P, Total	-	x	x	16	x	14	-	x	x	16	x	15
N. Total	-	x	x	6.8	x	3.5	-	x	x	6.5	x	5.0
N, NH_3	-	x	x	0.7	x	.55	-	x	x	.82	x	.55
N, NO_2	x	x	x	1.2	x	x	x	x	x	1.3	x	x
N, NO_3	x	x	x	.83	x	x	x	x	x	1.0	x	x
Fecal Coliform Cells/100 ml	x	x	x	12	<1	1	x	x	x	390	<1	290
Algae, No./100 cc	x	-	-	-	x	-	x	-	-	-	x	-

*In mg/1 unless otherwise specified.   1 mph = 1.609 kg/hr   1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	7/11/76											
Weather	Sunny											
Air Temp.°C	30											
Wind Direction	W											
Wind Speed, mph	10-15											
Elect. Power, kw/hr	80											
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.207	x	x	0.031	x	x						
pH, Units	–	7.2	7.2	7.8	8.0	7.8						
Temp.°C	–	24	26	24	27	27						
DO	–	1.0	1.9	3.0	2.8	2.7						
Alkalinity	–	156	184	178	x	166						
SS, Total	–	46	4	6	6	4						
SS, Volatile	–	29	2	4	1	2						
BOD, Total	–	13	4	7	1	1						
BOD, Soluble	–	7	2	4	x	1						
COD, Total	–	76	49	82	53	45						
COD, Soluble	–	73	33	49	x	41						
P, Total	–	x	x	18	x	15						
N, Total	–	x	x	5.4	x	5.8						
N, NH_3	–	x	x	.81	x	.81						
N, NO_2	x	x	x	1.3	x	x						
N, NO_3	x	x	x	1.1	x	x						
Fecal Coliform Cells/100 ml	x	x	x	5	10	98						
Algae, No./100 cc	x	–	–	–	x	–						

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	7/12/76						7/13/76					
Weather	Sunny						Sunny					
Air Temp.°C	22						23					
Wind Direction	E						SSE					
Wind Speed, mph	10-15						5-10					
Elect. Power, kw/hr	70						84					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.196	x	x	0.031	x	x	.219	x	x	0.031	x	x
pH, Units	-	7.0	7.2	7.7	7.0	7.4	-	7.1	7.2	7.8	7.3	7.5
Temp.°C	-	24	21	23	25	25	-	21	18	22	24	25
DO	-	1.7	1.9	2.7	2.7	2.6	-	1.7	2.6	3.0	2.5	2.7
Alkalinity	-	158	160	162	x	172	-	166	170	168	x	172
SS, Total	-	18	11	14	5	2	-	23	6	4	11	4
SS, Volatile	-	12	6	6	2	1	-	10	1	2	7	1
BOD, Total	-	16	6	6	1	4	-	17	3	4	1	4
BOD, Soluble	-	10	3	3	x	2	-	12	1	1	x	3
COD, Total	-	98	53	82	29	78	-	78	16	90	131	49
COD, Soluble	-	41	37	57	x	45	-	73	37	65	x	37
P, Total	-	x	x	18	x	14	-	x	x	19	x	12
N. Total	-	x	x	4.8	x	3.2	-	x	x	5.5	x	3.5
N, NH_3	-	x	x	.82	x	0.8	-	x	x	0.5	x	0.5
N, NO_2	x	x	x	1.3	x	x	x	x	x	1.1	x	x
N, NO_3	x	x	x	1.1	x	x	x	x	x	1.1	x	x
Fecal Coliform Cells/100 ml	x	x	x	92	1	980	x	x	x	390	880	1100
Algae, No./100 cc	x	69✱	49✱	88✱	x	88✱	x	-	-	-	x	-

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

✱Multiply by 10^6

APPENDIX B (Continued)

Date	7/14/76						7/15/76					
Weather	Sunny						Sunny					
Air Temp.°C	27						26					
Wind Direction	SW						SSW					
Wind Speed, mph	10-15						5-10					
Elect. Power, kw/hr	76						95					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.191	x	x	0.031	x	x	.202	x	x	0.031	x	x
pH, Units	–	7.0	7.0	8.0	7.4	7.9	–	7.1	7.2	8.0	8.4	8.0
Temp.°C	–	26	22	25	27	27	–	24	20	24	26	26
DO	–	0.3	1.7	2.5	2.3	2.5	–	1.0	2.4	2.8	2.3	2.6
Alkalinity	–	170	172	166	x	168	–	166	164	162	x	164
SS, Total	–	48	12	18	9	7	–	18	9	13	8	5
SS, Volatile	–	33	7	10	6	3	–	13	6	10	4	2
BOD, Total	–	22	4	8	1	6	–	17	3	7	1	4
BOD, Soluble	–	10	1	5	x	3	–	7	1	2	x	1
COD, Total	–	126	49	69	41	61	–	110	65	114	69	106
COD, Soluble	–	76	41	53	x	57	–	65	57	61	x	76
P, Total	–	x	x	17	x	15	–	x	x	18	x	13
N. Total	–	x	x	6.1	x	5.6	–	x	x	1.5	x	1.3
N, NH_3	–	x	x	0.5	x	0.6	–	x	x	0.6	x	0.6
N, NO_2	x	x	x	0.6	x	x	x	x	x	0.6	x	x
N, NO_3	x	x	x	1.7	x	x	x	x	x	1.4	x	x
Fecal Coliform Cells/100 ml	x	x	x	–	–	–	x	x	x	36	9	200
Algae, No./100 cc	x	–	–	–	x	–	x	–	–	–	x	–

*In mg/l unless otherwise specified.   1 mph = 1.609 kg/hr   1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	7/16/76						7/17/76					
Weather	Rain (0.1")						Sunny					
Air Temp.°C	22						23					
Wind Direction	NW						–					
Wind Speed, mph	5-10						–					
Elect. Power, kw/hr	75						80					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.202	x	x	0.031	x	x	.211	x	x	0.031	x	x
pH, Units	–	7.2	7.2	8.0	7.6	7.5	–	7.1	7.3	8.1	7.1	7.9
Temp.°C	–	22	18	23	25	25	–	22	20	21	23	24
DO	–	1.2	2.6	2.7	2.2	2.3	–	1.6	1.9	2.9	2.3	2.4
Alkalinity	–	172	166	162	x	170	–	170	174	170	x	168
SS, Total	–	18	6	11	8	3	–	22	10	13	9	5
SS, Volatile	–	11	4	8	5	1	–	17	6	7	5	2
BOD, Total	–	21	12	15	2	2	–	20	8	8	2	1
BOD, Soluble	–	14	5	7	x	1	–	13	3	2	x	1
COD, Total	–	73	78	114	16	41	–	82	65	69	24	41
COD, Soluble	–	41	37	82	x	37	–	41	45	41	x	37
P, Total	–	x	x	16	x	8.3	–	x	x	12	x	9.4
N. Total	–	x	x	1.7	x	1.1	–	x	x	1.2	x	1.1
N, NH_3	–	x	x	1.0	x	0.5	–	x	x	0.5	x	0.5
N, NO_2	x	x	x	0.8	x	x	x	x	x	0.5	x	x
N, NO_3	x	x	x	2.7	x	x	x	x	x	1.4	x	x
Fecal Coliform Cells/100 ml	x	x	x	9800	2	390	x	x	x	–	–	–
Algae, No./100 cc	x	–	–	–	x	–	x	–	–	–	x	–

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	7/18/76											
Weather	Sunny											
Air Temp.°C	–											
Wind Direction	–											
Wind Speed, mph	–											
Elect. Power, kw/hr	70											
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.208	x	x	0.031	x	x						
pH, Units	–	7.3	8.5	8.4	7.2	7.9						
Temp.°C	–	23	25	22	24	24						
DO	–	1.3	3.9	3.0	2.4	2.7						
Alkalinity	–	166	166	160	x	172						
SS, Total	–	19	11	15	8	3						
SS, Volatile	–	12	6	10	6	1						
BOD, Total	–	20	2	2	1	1						
BOD, Soluble	–	15	1	1	x	1						
COD, Total	–	86	53	33	29	37						
COD, Soluble	–	61	29	29	x	33						
P, Total	–	x	x	8.9	x	8.6						
N. Total	–	x	x	0.9	x	0.9						
N, NH_3	–	x	x	0.5	x	0.4						
N, NO_2	x	x	x	1.3	x	x						
N, NO_3	x	x	x	0.4	x	x						
Fecal Coliform Cells/100 ml	x	x	x	98 .105	2500	3900						
Algae, No./100 cc	x	–	–	–	x	–						

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	7/19/76						7/20/76					
Weather	Sunny						Sunny					
Air Temp.°C	22						24					
Wind Direction	-						-					
Wind Speed, mph	-						-					
Elect. Power, kw/hr	75						95					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.184	x	x	0.031	x	x	.204	x	x	0.031	x	x
pH, Units	–	7.2	8.3	8.5	8.5	8.4	–	7.3	8.7	8.2	7.3	7.7
Temp.°C	–	22	21	20	25	25	–	24	25	25	25	25
DO	–	1.6	3.8	3.8	2.7	2.5	–	1.1	3.0	1.7	2.6	2.7
Alkalinity	–	170	164	160	x	162	–	172	160	162	x	184
SS, Total	–	23	10	6	9	6	–	19	7	11	8	4
SS, Volatile	–	17	7	11	7	4	–	14	4	5	5	2
BOD, Total	-	1	3	4	2	2	–	23	2	4	2	1
BOD, Soluble	–	1	1	2	x	1	–	16	1	3	x	1
COD, Total	–	76	57	65	49	65	-	76	41	45	16	37
COD, Soluble	–	53	45	45	x	41	-	53	37	24	x	33
P, Total	–	x	x	9	x	8.0	–	x	x	7.7	x	5.0
N. Total	–	x	x	1.0	x	1.0	–	x	x	1.0	x	.7
N, NH_3	–	x	x	.6	x	0.6	–	x	x	0.7	x	.6
N, NO_2	x	x	x	.45	x	x	x	x	x	0.3	x	x
N, NO_3	x	x	x	1.1	x	x	x	x	x	1.2	x	x
Fecal Coliform Cells/100 ml	x	x	x	590	9800	7	x	x	x	0.98*	2000	1
Algae, No./10C cc	x	1.9*	0.19*	0.29*	x	0.5*	x	–	–	–	x	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

*Multiply by 10^6

APPENDIX B (Continued)

Date	7/21/76						7/22/76					
Weather	Rain						Overcast					
Air Temp.°C	24						23					
Wind Direction	W						NNE					
Wind Speed, mph	5-10						5-10					
Elect. Power, kw/hr	80						75					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.202	x	x	0.031	x	x	.201	x	x	0.031	x	x
pH, Units	6.9	6.8	7.5	7.8	7.4	7.2	6.9	7.0	7.2	8.2	7.0	7.4
Temp.°C	22	23	21	24	22	25	20	25	24	25	25	25
DO	0.2	1.7	2.3	0.3	3.4	2.6	0.2	1.8	1.5	2.4	2.3	1.5
Alkalinity	260	176	168	170	x	184	346	164	172	162	x	184
SS, Total	758	16	10	4	12	3	1964	19	13	4	9	5
SS, Volatile	594	12	7	3	9	2	1430	15	7	2	6	3
BOD, Total	440	16	3	4	3	2	870	15	12	2	1	1
BOD, Soluble	130	11	2	2	x	1	150	9	9	1	x	1
COD, Total	1585	65	61	49	61	37	3296	57	65	57	20	33
COD, Soluble	241	45	41	37	x	24	339	53	41	49	x	29
P, Total	37	x	x	8.0	x	4.5	55	x	x	8.5	x	6.3
N. Total	67	x	x	5.3	x	3.6	20	x	x	2.2	x	2.0
N, NH_3	11	x	x	.36	x	.15	.35	x	x	.22	x	.18
N, NO_2	x	x	x	.27	x	x	x	x	x	.30	x	x
N, NO_3	x	x	x	.48	x	x	x	x	x	.94	x	x
Fecal Coliform Cells/100 ml	x	x	x	290	2400	2500	x	x	x	980	390	2000
Algae, No./100 cc	x	—	—	—	x	—	x	—	—	—	x	—

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	7/23/76						7/24/76					
Weather	Sunny						Sunny					
Air Temp.°C	23						26					
Wind Direction	SSW						E					
Wind Speed, mph	5-10						5-10					
Elect. Power, kw/hr	80						85					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.200	x	x	0.031	x	x	.202	x	x	0.031	x	x
pH, Units	7.0	7.0	7.2	8.2	7.2	7.7	7.0	7.3	7.2	8.1	8.0	7.4
Temp.°C	20	24	24	26	24	26	18	25	24	14	28	15
DO	0.1	1.4	1.3	3.3	2.0	1.5	0.2	1.0	1.5	3.0	2.6	2.5
Alkalinity	228	170	174	164	x	150	258	172	170	162	x	166
SS, Total	340	22	12	15	10	18	842	18	15	5	11	13
SS, Volatile	270	18	9	11	7	10	688	14	11	3	7	10
BOD, Total	390	7	4	2	1	2	540	7	9	3	1	3
BOD, Soluble	165	4	2	1	x	1	198	5	5	2	x	1
COD, Total	771	53	44	61	37	24	1273	65	98	69	57	49
COD, Soluble	241	37	29	41	x	20	298	57	69	61	x	41
P, Total	28	x	x	6.6	x	3.2	35	x	x	7.7	x	5.2
N. Total	43	x	x	4.0	x	3.4	52	x	x	4.4	x	4.3
N, NH_3	28	x	x	0.5	x	0.3	36	x	x	.36	x	.46
N, NO_2	x	x	x	.24	x	x	x	x	x	.28	x	x
N, NO_3	x	x	x	.98	x	x	x	x	x	.89	x	x
Fecal Coliform Cells/100 ml	x	x	x	23	490	780	x	x	x	2	980	390
Algae, No./100 cc	x	–	–	–	x	–	x	–	–	–	x	–

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	7/25/76											
Weather	Sunny											
Air Temp.°C	28											
Wind Direction	NE											
Wind Speed, mph	5-10											
Elect. Power, kw/hr	85											
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.218	x	x	0.031	x	x						
pH, Units	6.8	7.4	7.2	8.2	8.2	7.5						
Temp.°C	21	25	24	21	25	15						
DO	0.2	1.4	1.7	2.4	2.8	2.3						
Alkalinity	232	170	176	160	x	164						
SS, Total	470	57	18	32	27	5						
SS, Volatile	382	42	9	10	20	3						
BOD, Total	450	7	7	4	1	3						
BOD, Soluble	165	5	4	2	x	1						
COD, Total	1208	65	76	57	45	73						
COD, Soluble	253	61	53	41	x	65						
P, Total	31	x	x	5.2	x	2.2						
N. Total	35	x	x	4.9	x	3.7						
N, NH_3	29	x	x	.39	x	.40						
N, NO_2	x	x	x	.17	x	x						
N, NO_3	x	x	x	1.1	x	x						
Fecal Coliform Cells/100 ml	x	x	x	6	290	1300						
Algae, No./100 cc	x	—	—	—	x	—						

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	7/26/76						7/27/76					
Weather	Sunny						Rain					
Air Temp.°C	23						22					
Wind Direction	SSW						Calm					
Wind Speed, mph	0-10						Calm					
Elect. Power, kw/hr	95						105					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.184	x	x	0.031	x	x	.204	x	x	0.031	x	x
pH, Units	7.0	7.2	7.5	8.1	7.6	6.9	6.9	-	7.6	8.1	7.6	7.3
Temp.°C	18	18	22	21	25	19	19	-	20	21	25	20
DO	0.1	1.7	1.8	3.0	2.6	2.3	0.1	-	1.2	2.2	2.5	2.5
Alkalinity	272	158	178	170	x	164	234	-	182	166	x	160
SS, Total	2308	1	135	3	2	7	786	-	274	7	2	2
SS, Volatile	1940	0	41	2	1	4	760	-	78	4	1	1
BOD, Total	450	1	13	2	1	3	470	-	16	4	1	1
BOD, Soluble	162	1	7	1	x	2	150	-	8	3	x	1
COD, Total	1363	61	110	61	41	57	1420	-	151	65	33	45
COD, Soluble	310	57	61	45	x	53	298	-	61	53	x	41
P, Total	38	x	x	10	x	6.0	36	x	x	9.8	x	5.6
N. Total	45	x	x	5.8	x	4.0	66	x	x	6.6	x	4.4
N, NH_3	23	x	x	.66	x	.68	30	x	x	.42	x	.45
N, NO_2	x	x	x	.23	x	x	x	x	x	.11	x	x
N, NO_3	x	x	x	.89	x	x	x	x	x	.71	x	x
Fecal Coliform Cells/100 ml	x	x	x	1900	880	2000	x	x	x	18	600	1300
Algae, No./100 cc	x	11000	98000	170,000	x	12000	x				x	

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	7/28/76						7/29/76					
Weather	Overcast						Sunny					
Air Temp.°C	23						23					
Wind Direction	SSW						N					
Wind Speed, mph	10-15						5-10					
Elect. Power, kw/hr	110						100					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.200	x	x	0.031	x	x	.202	x	x	0.031	x	x
pH, Units	6.7	-	7.1	7.9	7.6	7.3	6.8	-	7.4	8.0	7.6	7.4
Temp.°C	20	-	24	21	24	19	18	-	24	21	21	20
DO	0.1	-	2.5	3.9	4.0	3.7	0.1	-	2.2	3.9	4.3	3.8
Alkalinity	292	-	176	166	x	164	274	-	174	168	x	164
SS, Total	1236	-	234	62	3	3	960	-	187	100	20	4
SS, Volatile	924	-	54	21	2	2	816	-	50	39	9	2
BOD, Total	620	-	23	6	2	1	560	-	10	5	2	2
BOD, Soluble	130	-	16	2	x	1	120	-	5	3	x	1
COD, Total	1714	—	147	102	45	126	1501	-	114	106	45	41
COD, Soluble	298	-	49	57	x	61	184	-	49	65	x	37
P, Total	37	x	x	2.2	x	1.4	35	x	x	10	x	7.7
N. Total	88	x	x	7.2	x	5.8	69	x	x	7.1	x	4.9
N, NH_3	26	x	x	.80	x	.86	30	x	x	.40	x	.35
N, NO_2	x	x	x	.13	x	x	x	x	x	.084	x	x
N, NO_3	x	x	x	.65	x	x	x	x	x	.48	x	x
Fecal Coliform Cells/100 ml	x	x	x	40	110	1200	x	x	x	30	110	290
Algae, No./100 cc	x				x		x				x	

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	7/30/76						7/31/76					
Weather	Sunny						Sunny					
Air Temp.°C	21						23					
Wind Direction	-						N					
Wind Speed, mph	-						5-10					
Elect. Power, kw/hr	110						110					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.200	x	x	0.031	x	x	.214	x	x	0.031	x	x
pH, Units	6.8	-	7.4	8.2	7.9	7.8	6.7	-	7.4	8.1	8.0	7.7
Temp.°C	20	-	24	21	22	21	19	-	25	23	23	14
DO	0.1	-	3.0	4.2	4.4	4.1	0.2	-	3.0	4.2	4.2	4.2
Alkalinity	270	-	178	182	x	174	266	-	176	170	x	174
SS, Total	475	-	94	85	8	12	358	-	105	67	60	5
SS, Volatile	290	-	26	35	5	8	238	-	28	23	22	3
BOD, Total	595	-	6	7	1	1	528	-	9	6	3	1
BOD, Soluble	102	-	4	4	x	1	66	-	6	4	x	1
COD, Total	1080	-	86	114	53	49	1322	-	181	90	57	53
COD, Soluble	250	-	57	53	x	45	273	-	82	73	x	45
P, Total	40	x	x	14	x	8.1	37	x	x	10	x	6.6
N. Total	68	x	x	7.5	x	6.0	70	x	x	6.6	x	5.3
N, NH_3	29	x	x	.41	x	.39	24	x	x	.5	x	.6
N, NO_2	x	x	x	.06	x	x	x	x	x	.068	x	x
N, NO_3	x	x	x	.52	x	x	x	x	x	.52	x	x
Fecal Coliform Cells/100 ml	x	x	x	42	290	780	x	x	x	64	200	590
Algae, No./100 cc	x				x		x				x	

*In mg/l unless otherwise specified.   1 mph = 1.609 kg/hr   1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	8/16/76						8/17/76					
Weather	Sunny						Sunny					
Air Temp.°C	17						16					
Wind Direction	NNW						–					
Wind Speed, mph	5-10						0-5					
Elect. Power, kw/hr	–						–					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	–	x	x	0.031	x	x	.212	x	x	0.031	x	x
pH, Units	7.0	–	7.3	7.8	7.7	7.7	7.0	7.2	7.5	7.7	7.6	7.4
Temp.°C	16	–	19	17	19	36	18	25	18	18	20	23
DO	0.4	–	3.1	4.4	4.7	4.8	0.2	1.8	2.7	4.1	4.5	2.9
Alkalinity	236	–	172	178	x	170	250	186	164	172	x	170
SS, Total	682	–	92	80	20	3	820	67	68	89	17	14
SS, Volatile	540	–	19	14	5	2	620	33	12	12	8	7
BOD, Total	580	–	22	10	3	1	780	23	9	10	2	2
BOD, Soluble	150	–	7	6	x	1	170	21	8	3	x	1
COD, Total	3998	–	151	180	89	98	979	212	61	102	47	49
COD, Soluble	244	–	93	106	x	94	335	171	37	98	x	41
P, Total	45	x	x	15	x	11	28	x	x	12	x	8.3
N. Total	33	x	x	6.0	x	4.3	33	x	x	6.0	x	2.9
N, NH_3	25	x	x	.42	x	0.4	19	x	x	.68	x	.61
N, NO_2	x	x	x	.061	x	x	x	x	x	.03	x	x
N, NO_3	x	x	x	0.2	x	x	x	x	x	.11	x	x
Fecal Coliform Cells/100 ml	x	x	x	12	170	23	x	x	x	9	200	150
Algae, No./100 cc	x	–	780,000	49,000	x	39,000	x	–	–	–	x	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	8/18/76						8/19/76					
Weather	Sunny						Sunny					
Air Temp.°C	16						22					
Wind Direction	E						-					
Wind Speed, mph	10-15						0-5					
Elect. Power, kw/hr	105						95					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.207	x	x	0.031	x	x	.207	x	x	0.031	x	x
pH, Units	7.0	7.2	7.8	7.7	7.7	7.6	7.0	7.3	8.0	7.8	7.7	7.6
Temp.°C	18	24	21	21	20	17	18	24	24	20	20	17
DO	0.2	0.9	4.1	3.9	4.4	3.9	0.1	3.0	4.5	4.1	4.7	3.9
Alkalinity	240	176	168	170	x	166	326	167	169	168	x	168
SS, Total	596	12	57	65	4	8	760	37	63	129	72	18
SS, Volatile	488	8	13	17	2	5	584	20	16	39	14	11
BOD, Total	530	26	7	2	2	3	610	24	6	8	9	8
BOD, Soluble	130	14	4	1	x	1	150	12	3	4	x	5
COD, Total	1314	175	135	126	86	98	1830	102	78	106	86	33
COD, Soluble	318	139	114	118	x	90	253	53	57	61	x	24
P, Total	33	x	x	12	x	8.6	28	x	x	11	x	9.6
N. Total	28	x	x	12	x	3.2	46	x	x	8.5	x	6.1
N, NH_3	21	x	x	.52	x	0.61	26	x	x	.55	x	.34
N, NO_2	x	x	x	.034	x	x	x	x	x	.046	x	x
N, NO_3	x	x	x	.23	x	x	x	x	x	.35	x	x
Fecal Coliform Cells/100 ml	x	x	x	5	65	290	x	x	x	11	9800	390
Algae, No./100 cc	x	-	-	-	x	-	x	-	-	-	x	-

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	8/20/76						8/21/76					
Weather	Sunny						Overcast					
Air Temp.°C	21						23					
Wind Direction	-						WNW					
Wind Speed, mph	0-5						5-10					
Elect. Power, kw/hr	110						106					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.206	x	x	0.031	x	x	.206	x	x	0.031	x	x
pH, Units	7.0	7.2	7.8	7.8	7.7	7.6	6.9	7.2	7.7	7.9	7.7	7.6
Temp.°C	18	21	21	19	20	23	18	36	21	18	20	16
DO	0.2	2.7	3.5	4.2	4.8	4.8	0.2	1.9	3.2	4.0	4.6	3.8
Alkalinity	246	170	172	171	x	167	236	164	168	168	x	166
SS, Total	732	42	83	129	6	2	676	40	92	217	33	2
SS, Volatile	640	38	31	108	4	1	600	36	36	77	20	1
BOD, Total	528	16	3	6	1	1	561	16	5	9	2	1
BOD, Soluble	132	6	1	2	x	1	121	8	4	3	x	1
COD, Total	1651	159	184	155	277	82	1795	110	78	102	57	233
COD, Soluble	420	151	106	118	x	37	718	49	32	37	x	94
P, Total	36	x	x	27	x	9.3	34	x	x	11	x	10
N. Total	43	x	x	5.0	x	4.3	38	x	x	6.5	x	3.9
N, NH_3	34	x	x	.60	x	.60	29	x	x	.61	x	.61
N, NO_2	x	x	x	.036	x	x	x	x	x	.019	x	x
N, NO_3	x	x	x	.34	x	x	x	x	x	.32	x	x
Fecal Coliform Cells/100 ml	x	x	x	590	1700	690	x	x	x	16	880	87
Algae, No./100 cc	x	-	-	-	x	-	x	-	-	-	x	-

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	8/22/76											
Weather	Sunny											
Air Temp.°C	26											
Wind Direction	-											
Wind Speed, mph	0-5											
Elect. Power, kw/hr	109											
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.224	x	x	0.031	x	x						
pH, Units	6.9	7.2	7.8	7.9	7.7	7.6						
Temp.°C	17	23	36	19	20	15						
DO	0.2	1.4	3.3	4.0	4.4	3.8						
Alkalinity	256	166	166	170	x	170						
SS, Total	1040	60	94	215	34	10						
SS, Volatile	856	43	42	52	16	4						
BOD, Total	627	17	4	8	1	1						
BOD, Soluble	99	7	2	2	x	1						
COD, Total	1877	102	37	114	57	41						
COD, Soluble	241	33	12	69	x	20						
P, Total	38	x	x	18	x	12						
N. Total	48	x	x	6.8	x	4.0						
N, NH_3	31	x	x	.60	x	.57						
N, NO_2	x	x	x	.022	x	x						
N, NO_3	x	x	x	.32	x	x						
Fecal Coliform Cells/100 ml	x	x	x	8	62	780						
Algae, No./100 cc	x	-	-	-	x	-						

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	9/13/76						9/14/76					
Weather	Sunny						Sunny					
Air Temp.°C	17						16					
Wind Direction	Calm						SSW					
Wind Speed, mph	0-5						15-20					
Elect. Power, kw/hr	70						70					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.185	x	x	0.031	x	x	.179	x	x	0.031	x	x
pH, Units	7.5	7.1	8.2	8.0	8.1	7.9	6.9	7.2	8.4	8.0	8.2	8.1
Temp.°C	22	22	21	21	21	21	14	19	17	20	17	14
DO	0.2	2.9	3.8	4.7	5.0	4.9	0.3	2.1	3.1	4.5	4.9	4.8
Alkalinity	303	176	165	172	x	166	299	162	170	175	x	166
SS, Total	154	38	43	23	56	43	228	59	160	11	20	17
SS, Volatile	114	22	22	16	17	13	202	54	94	7	13	8
BOD, Total	360	29	8	5	1	5	300	21	11	1	1	1
BOD, Soluble	150	24	7	2	x	2	130	5	4	0	x	0
COD, Total	506	208	86	37	41	53	942	98	114	33	45	37
COD, Soluble	310	155	41	33	x	45	379	53	41	29	x	33
P, Total	56	x	x	15	x	14	42	x	x	13	x	11
N. Total	88	x	x	4.9	x	7.3	80	x	x	4.0	x	4.0
N, NH_3	52	x	x	.74	x	.55	29	x	x	.44	x	.42
N, NO_2	x	x	x	.030	x	x	x	x	x	.022	x	x
N, NO_3	x	x	x	.50	x	x	x	x	x	.28	x	x
Fecal Coliform Cells/100 ml	x	x	x	16	<1	<1	x	x	x	9	<1	1
Algae, No./100 cc	x	9.8✱	9.8✱	29✱	x	20✱	x	–	–	–	x	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

✱Multiply by 10^6

APPENDIX B (Continued)

Date	9/15/76						9/16/76					
Weather	Sunny						Sunny					
Air Temp.°C	18						12					
Wind Direction	NW						E					
Wind Speed, mph	5-10						5-10					
Elect. Power, kw/hr	65						85					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.205	x	x	0.031	x	x	.204	x	x	0.031	x	x
pH, Units	6.8	7.1	8.2	8.2	8.2	8.2	6.9	7.3	8.2	8.0	8.2	8.1
Temp.°C	15	19	19	21	18	15	13	18	16	20	15	14
DO	0.3	1.7	2.5	5.6	5.1	5.0	0.4	2.4	2.9	4.3	4.8	5.0
Alkalinity	289	161	168	172	x	172	325	163	166	173	x	166
SS, Total	420	49	65	3	32	11	820	62	65	4	33	13
SS, Volatile	350	39	28	2	16	7	684	34	24	3	19	8
BOD, Total	470	25	4	2	4	2	1170	22	6	3	2	2
BOD, Soluble	130	7	2	1	x	1	170	8	4	2	x	1
COD, Total	906	94	69	45	61	45	2049	167	151	65	122	52
COD, Soluble	216	49	33	37	x	41	261	41	49	42	x	44
P, Total	50	x	x	16	x	14	52	x	x	17	x	15
N. Total	54	x	x	5.0	x	5.3	78	x	x	5.3	x	6.2
N, NH_3	34	x	x	.38	x	.52	35	x	x	.49	x	.60
N, NO_2	x	x	x	.011	x	x	x	x	x	.013	x	x
N, NO_3	x	x	x	.03	x	x	x	x	x	.03	x	x
Fecal Coliform Cells/100 ml	x	x	x	10	<1	2	x	x	x	200	<1	<1
Algae, No./100 cc	x	–	–	–	x	–	x	–	–	–	x	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	9/17/76						9/18/76					
Weather	Overcast						Sunny					
Air Temp.°C	13						14					
Wind Direction	ENE						Calm					
Wind Speed, mph	10-15						0-5					
Elect. Power, kw/hr	75						85					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.204	x	x	0.031	x	x	.208	x	x	0.031	x	x
pH, Units	7.0	7.2	8.2	8.1	8.2	8.1	7.0	7.1	8.3	7.9	8.0	8.1
Temp.°C	13	18	16	21	16	18	14	18	17	20	17	20
DO	0.3	2.2	3.6	4.5	4.9	5.3	0.3	2.5	3.7	4.5	5.0	5.1
Alkalinity	248	154	160	168	x	170	240	150	158	164	x	170
SS, Total	542	59	58	20	31	18	534	62	56	27	31	29
SS, Volatile	444	39	28	9	15	12	286	40	23	13	20	20
BOD, Total	495	24	5	2	1	1	484	32	6	2	1	2
BOD, Soluble	132	8	3	1	x	1	132	8	4	1	x	1
COD, Total	1324	102	65	49	69	41	996	114	69	73	53	57
COD, Soluble	306	49	37	33	x	37	286	61	53	57	x	29
P, Total	52	x	x	15	x	13	51	x	x	14	x	13
N. Total	50	x	x	3.9	x	4.1	45	x	x	3.9	x	4.4
N, NH_3	37	x	x	.42	x	.52	36	x	x	.47	x	.55
N, NO_2	x	x	x	.019	x	x	x	x	x	.032	x	x
N, NO_3	x	x	x	.06	x	x	x	x	x	.14	x	x
Fecal Coliform Cells/100 ml	x	x	x	3	<1	<1	x	x	x	490	1	100
Algae, No./100 cc	x	–	–	–	x	–	x	–	–	–	x	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	9/19/76											
Weather	Sunny											
Air Temp.°C	13											
Wind Direction	Calm											
Wind Speed, mph	0-5											
Elect. Power, kw/hr	65											
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.208	x	x	0.031	x	x						
pH, Units	6.9	7.2	8.2	7.9	8.0	8.0						
Temp.°C	15	19	18	21	18	21						
DO	0.3	3.8	3.2	4.5	5.0	5.2						
Alkalinity	244	154	156	168	x	168						
SS, Total	1006	74	53	21	45	19						
SS, Volatile	694	56	28	11	22	12						
BOD, Total	770	44	6	2	2	1						
BOD, Soluble	154	12	4	1	x	1						
COD, Total	1730	143	78	65	61	71						
COD, Soluble	326	65	69	57	x	61						
P, Total	53	x	x	14	x	13						
N. Total	50	x	x	4.0	x	3.8						
N, NH$_3$	30	x	x	.45	x	.52						
N, NO$_2$	x	x	x	.023	x	x						
N, NO$_3$	x	x	x	.04	x	x						
Fecal Coliform Cells/100 ml	x	x	x	1300	<1	9						
Algae, No./100 cc	x	–	–	–	x	–						

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	10/1/76						10/2/76					
Weather	Sunny						Sunny					
Air Temp.°C	9						17					
Wind Direction	E						–					
Wind Speed, mph	5-10						Calm					
Elect. Power, kw/hr	-						90					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.195	x	x	0.031	x	x	.209	x	x	0.031	x	x
pH, Units	7.5	7.1	7.6	8.4	7.8	7.8	7.0	7.0	7.7	8.3	7.6	7.7
Temp.°C	17	13	8	17	14	17	14	15	14	18	15	18
DO	0.3	3.7	3.1	6.0	5.1	4.8	0.3	2.9	4.4	6.0	4.7	5.1
Alkalinity	290	154	168	174	x	180	286	154	166	178	x	184
SS, Total	546	30	63	14	36	154	884	35	24	9	44	14
SS, Volatile	430	18	22	12	7	119	756	29	11	7	16	5
BOD, Total	891	17	5	1	1	5	1170	17	4	4	2	3
BOD, Soluble	132	4	2	1	x	4	130	7	2	2	x	2
COD, Total	1126	82	69	86	28	98	1975	94	78	86	49	69
COD, Soluble	363	78	61	82	x	73	330	82	65	69	x	57
P, Total	46	x	x	13	x	9.5	57	x	x	13	x	9.0
N. Total	68	x	x	4.3	x	5.3	205	x	x	2.0	x	4.5
N, NH_3	38	x	x	.36	x	.49	38	x	x	.40	x	.44
N, NO_2	x	x	x	.015	x	x	x	x	x	.011	x	x
N, NO_3	x	x	x	.17	x	x	x	x	x	.28	x	x
Fecal Coliform Cells/100 ml	x	x	x	2	200	200	x	x	x	4	200	290
Algae, No./100 cc	x	–	–	–	x	–	x	–	–	–	x	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	10/3/76											
Weather	Sunny											
Air Temp.°C	20											
Wind Direction	S											
Wind Speed, mph	5-10											
Elect. Power, kw/hr	65											
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.218	x	x	0.031	x	x						
pH, Units	6.9	7.0	7.8	8.3	7.5	7.7						
Temp.°C	14	16	15	18	14	18						
DO	0.3	2.5	3.6	5.6	5.0	5.4						
Alkalinity	278	146	160	168	x	178						
SS, Total	1032	33	32	12	41	12						
SS, Volatile	804	25	30	4	11	8						
BOD, Total	900	18	5	4	2	2						
BOD, Soluble	130	11	3	2	x	1						
COD, Total	2611	102	65	57	37	78						
COD, Soluble	351	94	57	49	x	69						
P, Total	61	x	x	13	x	9.0						
N. Total	185	x	x	1.5	x	4.1						
N, NH_3	34	x	x	.39	x	.45						
N, NO_2	x	x	x	.007	x	x						
N, NO_3	x	x	x	.19	x	x						
Fecal Coliform Cells/100 ml	x	x	x	200	60	200						
Algae, No./100 cc	x	–	–	–	x	–						

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	10/4/76						10/5/76					
Weather	Sunny						Rain					
Air Temp.°C	17						11					
Wind Direction	SSW						S					
Wind Speed, mph	10-15						15-20					
Elect. Power, kw/hr	60						80					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.192	x	x	0.031	x	x	.208	x	x	0.031	x	x
pH, Units	7.0	7.1	7.8	8.4	7.5	7.8	6.9	7.0	7.7	8.3	7.8	7.8
Temp.°C	14	15	13	18	14	18	15	11	8	18	16	19
DO	0.3	3.0	3.7	5.6	4.9	5.0	0.3	2.2	4.0	5.5	5.1	4.9
Alkalinity	242	146	166	168	x	180	216	160	160	168	x	178
SS, Total	492	38	31	18	12	18	972	21	10	10	13	16
SS, Volatile	328	22	8	5	7	9	760	10	4	3	4	4
BOD, Total	600	19	4	3	2	4	960	16	3	2	2	6
BOD, Soluble	130	11	3	2	x	3	110	7	2	1	x	4
COD, Total	1567	94	53	65	29	73	1567	57	90	49	49	41
COD, Soluble	298	78	49	53	x	65	347	49	57	41	x	33
P, Total	48	x	x	12	x	8.8	50	x	x	12	x	9.9
N. Total	193	x	x	1.5	x	4.1	193	x	x	34	x	4.0
N, NH_3	39	x	x	.48	x	.54	32	x	x	.42	x	.48
N, NO_2	x	x	x	.007	x	x	x	x	x	.007	x	x
N, NO_3	x	x	x	.15	x	x	x	x	x	.20	x	x
Fecal Coliform Cells/100 ml	x	x	x	200	168	290	x	x	x	5	590	490
Algae, No./100 cc	x	15*	5.9*	9.5*	x	8.1*	x	—	—	—	x	—

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

*Multiply by 10^6

APPENDIX B (Continued)

Date	10/6/76						10/7/76					
Weather	Sunny						Sunny					
Air Temp.°C	4						4					
Wind Direction	NW						N					
Wind Speed, mph	5-10						5-10					
Elect. Power, kw/hr	100						105					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.236	x	x	0.031	x	x	.212	x	x	0.031	x	x
pH, Units	7.2	7.2	7.7	8.0	8.0	7.7	7.2	7.2	7.7	8.4	8.2	8.3
Temp.°C	11	6	9	16	15	16	12	13	8	15	9	15
DO	0.6	3.4	3.8	5.0	5.5	5.3	0.2	2.4	4.2	5.3	5.9	6.0
Alkalinity	296	150	178	166	x	160	298	140	158	168	x	170
SS, Total	800	37	7	16	284	47	576	16	8	4	9	25
SS, Volatile	520	27	5	9	18	5	468	8	4	2	3	8
BOD, Total	960	20	1	2	4	4	1020	17	2	1	2	6
BOD, Soluble	70	15	1	1	x	2	120	12	1	1	x	3
COD, Total	2554	86	45	106	49	49	1085	94	65	86	45	78
COD, Soluble	159	73	37	49	x	41	220	82	61	61	x	61
P, Total	37	x	x	12	x	9.9	44	x	x	13	x	10
N. Total	53	x	x	3.6	x	2.6	60	x	x	3.2	x	3.0
N, NH_3	26	x	x	.44	x	.36	30	x	x	.41	x	.40
N, NO_2	x	x	x	.007	x	x	x	x	x	.032	x	x
N, NO_3	x	x	x	.21	x	x	x	x	x	.04	x	x
Fecal Coliform Cells/100 ml	x	x	x	15	390	140	x	x	x	25	3	3
Algae, No./100 cc	x	–	–	–	x	–	x	–	–	–	x	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	10/8/76						10/9/76					
Weather	Sunny						Rain					
Air Temp.°C	3						.2					
Wind Direction	N						NNW					
Wind Speed, mph	5-10						5-10					
Elect. Power, kw/hr	85						110					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.207	x	x	0.031	x	x	.212	x	x	0.031	x	x
pH, Units	7.0	7.6	7.7	8.3	7.6	7.8	7.0	8.1	7.6	8.3	7.6	7.8
Temp.°C	12	13	10	15	15	14	11	12	9	14	14	14
DO	0.2	4.0	3.7	4.9	4.8	5.1	0.3	4.9	3.7	4.9	5.0	5.2
Alkalinity	212	169	162	166	x	172	244	162	160	166	x	168
SS, Total	488	22	11	13	2	10	656	30	8	2	18	12
SS, Volatile	412	19	6	5	1	4	528	16	11	1	6	6
BOD, Total	726	4	2	1	1	2	726	2	2	1	1	1
BOD, Soluble	110	2	1	1	x	1	132	1	1	1	x	1
COD, Total	1142	61	69	57	29	41	1166	73	57	97	93	53
COD, Soluble	265	53	61	49	x	37	253	57	49	45	x	41
P, Total	43	x	x	13	x	10	57	x	x	14	x	12
N. Total	35	x	x	3.7	x	2.9	40	x	x	3.5	x	3.5
N, NH_3	32	x	x	.36	x	.11	33	x	x	.27	x	.24
N, NO_2	x	x	x	.028	x	x	x	x	x	.043	x	x
N, NO_3	x	x	x	.04	x	x	x	x	x	.04	x	x
Fecal Coliform Cells/100 ml	x	x	x	180	<1	<1	x	x	x	38	45	170
Algae, No./100 cc	x	–	–	–	x	–	x	–	–	–	x	–

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	10/10/76											
Weather	Sunny											
Air Temp.°C	5											
Wind Direction	SSW											
Wind Speed, mph	5-10											
Elect. Power, kw/hr	110											
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.224	x	x	0.031	x	x						
pH, Units	6.8	-	7.5	8.1	7.3	8.0						
Temp.°C	10	-	9	14	14	14						
DO	0.3	-	3.8	4.6	4.7	5.2						
Alkalinity	144	-	160	164	x	170						
SS, Total	450	-	32	6	2	18						
SS, Volatile	380	-	23	4	1	5						
BOD, Total	231	-	1	1	1	1						
BOD, Soluble	55	-	1	1	x	1						
COD, Total	824	-	65	69	41	53						
COD, Soluble	184	-	57	61	x	41						
P, Total	31	x	x	13	x	11						
N. Total	48	x	x	3.6	x	3.1						
N, NH_3	15	x	x	.32	x	.30						
N, NO_2	x	x	x	.042	x	x						
N, NO_3	x	x	x	.03	x	x						
Fecal Coliform Cells/100 ml	x	x	x	5	2	1						
Algae, No./100 cc	x	-	-	—	x	-						

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	10/11/76						10/12/76					
Weather	Sunny						–					
Air Temp.°C	11						–					
Wind Direction	SSE						–					
Wind Speed, mph	5-10						–					
Elect. Power, kw/hr	85						85					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.209	x	x	0.031	x	x	.213	x	x	0.031	x	x
pH, Units	7.0	–	7.5	8.1	7.5	7.9	–	–	–	–	–	–
Temp.°C	13	–	8	14	14	14	–	–	–	–	–	–
DO	0.1	–	4.4	4.8	4.7	5.3	–	–	–	–	–	–
Alkalinity	252	–	160	170	x	172	–	–	–	–	x	–
SS, Total	836	–	19	14	6	23	–	–	–	–	–	–
SS, Volatile	434	–	10	9	4	16	–	–	–	–	–	–
BOD, Total	780	–	2	1	1	1	–	–	–	–	–	–
BOD, Soluble	160	–	1	1	x	1	–	–	–	–	x	–
COD, Total	1003	–	65	69	49	57	–	–	–	–	–	–
COD, Soluble	286	–	53	61	x	49	–	–	–	–	x	–
P, Total	46	x	x	13	x	11	–	x	x	–	x	–
N. Total	60	x	x	3.0	x	2.6	–	x	x	–	x	–
N, NH_3	37	x	x	.30	x	.40	–	x	x	–	x	–
N, NO_2	x	x	x	.019	x	x	x	x	x	–	x	x
N, NO_3	x	x	x	.25	x	x	x	x	x	–	x	x
Fecal Coliform Cells/100 ml	x	x	x	12	<1	<1	x	x	x	–	–	–
Algae, No./100 cc	x	–	0.02*	0.14*	x	0.25*	x	–	–	–	x	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

*Multiply by 10^6

APPENDIX B (Continued)

Date	10/13/76						10/14/76					
Weather	Sunny						Sunny					
Air Temp.°C	4						3					
Wind Direction	W						N					
Wind Speed, mph	5-10						10-15					
Elect. Power, kw/hr	90						90					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.206	x	x	0.031	x	x	.207	x	x	0.031	x	x
pH, Units	7.0	-	-	7.8	7.6	7.6	7.3	-	-	8.1	7.6	7.8
Temp.°C	14	-	-	16	16	16	11	-	-	15	15	15
DO	0.3	-	-	4.2	4.6	4.8	0.3	-	-	4.4	4.1	4.5
Alkalinity	270	-	-	160	x	170	260	-	-	170	x	164
SS, Total	2604	-	-	4	3	5	584	-	-	6	2	13
SS, Volatile	2032	-	-	2	1	3	452	-	-	4	1	3
BOD, Total	1440	-	-	1	1	1	870	-	-	2	1	1
BOD, Soluble	150	-	-	1	x	1	140	-	-	1	x	1
COD, Total	7344	-	-	57	28	45	1110	-	-	41	20	33
COD, Soluble	388	-	-	49	x	33	237	-	-	33	x	29
P, Total	78	x	x	14	x	11	50	x	x	15	x	12
N. Total	40	x	x	2.9	x	3.5	60	x	x	3.6	x	3.4
N, NH_3	38	x	x	.36	x	.32	32	x	x	.41	x	.43
N, NO_2	x	x	x	.020	x	x	x	x	x	.017	x	x
N, NO_3	x	x	x	.19	x	x	x	x	x	.14	x	x
Fecal Coliform Cells/100 ml	x	x	x	36	2	31	x	x	x	590	1400	220
Algae, No./100 cc	x	-	-	-	x	-	x	-	-	-	x	-

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	10/15/76						10/16/76					
Weather	Sunny						Sunny					
Air Temp.°C	11						6					
Wind Direction	WNW						SSW					
Wind Speed, mph	10-15						5-10					
Elect. Power, kw/hr	80						145					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.206	x	x	0.031	x	x	.221	x	x	0.031	x	x
pH, Units	7.5	8.2	7.7	8.0	8.2	8.3	7.2	8.0	7.5	8.0	8.1	7.9
Temp.°C	18	10	12	15	14	13	11	14	10	14	13	13
DO	0.1	4.7	3.4	4.2	4.6	3.9	0.1	5.2	3.6	4.7	4.9	4.7
Alkalinity	256	164	166	172	x	194	248	166	164	174	x	178
SS, Total	142	40	44	6	14	40	564	20	40	4	17	23
SS, Volatile	112	9	19	4	5	6	472	3	20	2	5	6
BOD, Total	429	1	2	1	1	4	891	1	3	1	1	1
BOD, Soluble	198	1	1	1	x	2	176	1	1	1	x	1
COD, Total	539	44	61	41	37	49	1321	102	61	45	37	41
COD, Soluble	294	37	57	33	x	41	339	61	57	33	x	37
P, Total	42	x	x	15	x	12	53	x	x	14	x	13
N. Total	55	x	x	3.7	x	3.4	75	x	x	3.7	x	3.4
N, NH_3	41	x	x	.47	x	.46	39	x	x	.44	x	.50
N, NO_2	x	x	x	.021	x	x	x	x	x	.024	x	x
N, NO_3	x	x	x	.10	x	x	x	x	x	.21	x	x
Fecal Coliform Cells/100 ml	x	x	x	290	27	28	x	x	x	61	8	196
Algae, No./100 cc	x	–	–	–	x	–	x	–	–	–	x	–

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	10/17/76											
Weather	Sunny											
Air Temp.°C	2											
Wind Direction	—											
Wind Speed, mph	Calm											
Elect. Power, kw/hr	135											
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.208	x	x	0.031	x	x						
pH, Units	7.2	7.9	8.0	8.1	7.8	7.9						
Temp.°C	10	13	8	13	12	10						
DO	0.2	5.2	4.8	4.5	4.5	4.6						
Alkalinity	250	166	164	176	x	180						
SS, Total	342	32	15	6	5	30						
SS, Volatile	290	7	11	4	3	5						
BOD, Total	1221	1	1	1	1	1						
BOD, Soluble	165	1	1	1	x	1						
COD, Total	743	45	57	45	29	41						
COD, Soluble	277	41	53	41	x	37						
P, Total	42	x	x	15	x	13						
N. Total	55	x	x	3.4	x	3.0						
N, NH_3	39	x	x	.45	x	.44						
N, NO_2	x	x	x	.026	x	x						
N, NO_3	x	x	x	.20	x	x						
Fecal Coliform Cells/100 ml	x	x	x	31	1	43						
Algae, No./100 cc	x	—	—	—	x	—						

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	10/18/76						10/19/76					
Weather	Sunny						–					
Air Temp.°C	-1						–					
Wind Direction	N						–					
Wind Speed, mph	5-10						–					
Elect. Power, kw/hr	95						115					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.190	x	x	0.031	x	x	.204	x	x	0.031	x	x
pH, Units	7.1	8.0	7.6	8.0	7.6	7.9	–	–	–	–	–	–
Temp.°C	11	11	8	11	11	10	–	–	–	–	–	–
DO	0.2	5.0	3.9	4.8	4.8	5.0	–	–	–	–	–	–
Alkalinity	250	158	164	170	x	174	–	–	–	–	x	–
SS, Total	496	41	45	8	5	17	–	–	–	–	–	–
SS, Volatile	420	18	16	5	3	6	–	–	–	–	–	–
BOD, Total	840	4	4	1	1	1	–	–	–	–	–	–
BOD, Soluble	110	2	2	1	x	1	–	–	–	–	x	–
COD, Total	1191	69	61	33	37	41	–	–	–	–	–	–
COD, Soluble	282	65	49	29	x	37	–	–	–	–	x	–
P, Total	57	x	x	15	x	12	–	x	x	–	x	–
N. Total	60	x	x	5.0	x	4.3	–	x	x	–	x	–
N, NH_3	41	x	x	.42	x	.44	–	x	x	–	x	–
N, NO_2	x	x	x	.021	x	x	x	x	x	–	x	x
N, NO_3	x	x	x	.15	x	x	x	x	x	–	x	x
Fecal Coliform Cells/100 ml	x	x	x	5	<1	17	x	x	x	–	–	–
Algae, No./100 cc	x	4.9✱	12✱	1.6✱	x	5.2✱	x	–	–	–	x	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

✱Multiply by 10^6

APPENDIX B (Continued)

Date	10/20/76						10/21/76					
Weather	Overcast						Sunny					
Air Temp.°C	4						0					
Wind Direction	W						W					
Wind Speed, mph	10-15						15-20					
Elect. Power, kw/hr	100						410					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.184	x	x	0.031	x	x	.204	x	x	0.031	x	x
pH, Units	7.0	7.8	7.6	7.8	7.5	7.8	7.2	7.9	7.8	8.1	7.8	7.9
Temp.°C	8	11	11	11	12	10	10	10	8	10	11	8
DO	0.2	4.9	3.9	4.5	4.5	4.6	0.3	5.3	4.8	4.8	4.8	5.3
Alkalinity	284	162	156	170	x	172	252	166	162	170	x	172
SS, Total	896	53	82	34	10	27	458	70	45	15	11	19
SS, Volatile	754	36	28	12	5	4	374	17	20	10	6	6
BOD, Total	1530	10	7	2	1	1	660	17	5	2	1	3
BOD, Soluble	200	2	2	1	x	1	100	8	3	1	x	2
COD, Total	2331	86	73	175	29	37	963	49	53	45	29	41
COD, Soluble	388	53	60	57	x	33	208	41	45	37	x	37
P, Total	56	x	x	13	x	13	44	x	x	14	x	12
N, Total	85	x	x	3.0	x	2.9	55	x	x	4.1	x	3.5
N, NH_3	43	x	x	1.2	x	.93	43	x	x	.32	x	.36
N, NO_2	x	x	x	.026	x	x	x	x	x	.028	x	x
N, NO_3	x	x	x	.20	x	x	x	x	x	.10	x	x
Fecal Coliform Cells/100 ml	x	x	x	72	93	24	x	x	x	50	2	200
Algae, No./100 cc	x	–	–	–	x	–	x	–	–	–	x	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	10/22/76						10/23/76					
Weather	Sunny						Rain					
Air Temp.°C	3						8					
Wind Direction	NW						SE					
Wind Speed, mph	10-15						5-10					
Elect. Power, kw/hr	250						105					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.184	x	x	0.031	x	x	.195	x	x	0.031	x	x
pH, Units	6.7	7.9	7.2	8.1	8.2	7.8	6.8	7.5	7.6	7.4	7.8	7.8
Temp.°C	6	9	7	9	7	4	9	10	10	10	10	10
DO	0.3	3.4	3.0	3.3	3.6	3.6	0.2	3.1	3.1	3.5	3.3	3.5
Alkalinity	230	156	158	162	x	170	226	146	158	154	x	164
SS, Total	390	27	28	18	13	13	508	39	45	14	13	15
SS, Volatile	274	7	20	7	5	5	422	37	24	8	11	7
BOD, Total	528	1	1	1	1	2	627	16	3	2	1	1
BOD, Soluble	143	0	1	1	x	1	143	10	1	1	x	1
COD, Total	990	65	78	57	42	63	1159	114	65	45	41	94
COD, Soluble	367	61	69	49	x	45	375	78	61	37	x	49
P, Total	51	x	x	15	x	13	53	x	x	14	x	13
N. Total	68	x	x	5.1	x	5.0	75	x	x	4.7	x	4.5
N, NH_3	36	x	x	.34	x	.38	37	x	x	.31	x	.34
N, NO_2	x	x	x	.065	x	x	x	x	x	.067	x	x
N, NO_3	x	x	x	.29	x	x	x	x	x	.32	x	x
Fecal Coliform Cells/100 ml	x	x	x	15	12	290	x	x	x	12	19	100
Algae, No./100 cc	x	-	-	-	x	-	x	-	-	-	x	-

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	10/24/76											
Weather	Rain (0.6")											
Air Temp.°C	8											
Wind Direction	—											
Wind Speed, mph	Calm											
Elect. Power, kw/hr	335											
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.237	x	x	0.031	x	x						
pH, Units	7.0	7.6	7.6	8.0	8.0	7.9						
Temp.°C	15	11	11	10	11	11						
DO	0.1	3.4	2.5	3.4	3.4	3.5						
Alkalinity	132	160	142	164	x	158						
SS, Total	936	32	60	36	28	92						
SS, Volatile	620	16	19	10	4	12						
BOD, Total	390	3	7	2	1	2						
BOD, Soluble	40	1	3	1	x	1						
COD, Total	1382	57	73	53	57	49						
COD, Soluble	126	53	69	45	x	37						
P, Total	50	x	x	15	x	12						
N. Total	52	x	x	3.5	x	3.9						
N, NH_3	18	x	x	.34	x	.30						
N, NO_2	x	x	x	.076	x	x						
N, NO_3	x	x	x	.33	x	x						
Fecal Coliform Cells/100 ml	x	x	x	65	<1	57						
Algae, No./100 cc	x	—	—	—	x	—						

*In mg/l unless otherwise specified.   1 mph = 1.609 kg/hr   1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	10/25/76						10/26/76					
Weather	Overcast						Sunny					
Air Temp.°C	6						-1					
Wind Direction	NNW						–					
Wind Speed, mph	10-15						Calm					
Elect. Power, kw/hr	195						160					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.196	x	x	0.031	x	x	.178	x	x	0.031	x	x
pH, Units	7.1	7.8	7.5	8.0	7.8	7.9	7.1	7.9	7.6	8.0	7.9	7.9
Temp.°C	15	10	8	10	11	11	13	10	9	12	11	11
DO	0.2	3.5	2.8	3.4	3.6	3.7	0.2	3.8	3.4	3.4	3.5	3.5
Alkalinity	266	160	158	166	x	166	274	166	164	166	x	172
SS, Total	476	26	74	13	17	18	448	27	43	11	14	15
SS, Volatile	400	15	33	10	9	10	394	16	24	8	11	8
BOD, Total	450	4	7	2	1	2	630	6	7	3	1	5
BOD, Soluble	9	2	2	1	x	1	160	4	4	1	x	3
COD, Total	989	53	86	57	57	49	1224	53	57	45	49	37
COD, Soluble	330	49	82	53	x	41	290	49	49	41	x	33
P, Total	46	x	x	14	x	13	37	x	x	13	x	12
N. Total	70	x	x	3.5	x	3.4	80	x	x	4.0	x	4.0
N, NH_3	36	x	x	.29	x	.37	34	x	x	.30	x	.32
N, NO_2	x	x	x	.071	x	x	x	x	x	.073	x	x
N, NO_3	x	x	x	.32	x	x	x	x	x	.42	x	x
Fecal Coliform Cells/100 ml	x	x	x	85	6	5	x	x	x	100	<1	19
Algae, No./100 cc	x	0.059*	0.13*	0.049*	x	0.015*	x	–	–	–	x	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

*Multiply by 10^6

APPENDIX B (Continued)

Date	10/27/76						10/28/76					
Weather	Overcast						Sunny					
Air Temp.°C	2						-3					
Wind Direction	NE						SSW					
Wind Speed, mph	5-10						10-15					
Elect. Power, kw/hr	245						100					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.183	x	x	0.031	x	x	.185	x	x	0.031	x	x
pH, Units	7.2	7.8	7.6	7.9	8.1	7.9	–	7.9	7.7	8.0	8.0	7.8
Temp.°C	12	9	7	9	10	10	–	9	6	9	9	9
DO	0.2	3.8	2.9	3.8	4.0	4.1	–	3.7	3.3	3.8	4.0	4.0
Alkalinity	250	166	168	172	x	172	–	166	165	173	x	178
SS, Total	370	33	54	3	4	2	–	21	27	3	18	3
SS, Volatile	334	18	24	2	2	1	–	17	18	2	10	2
BOD, Total	510	4	8	2	2	1	–	6	6	2	1	3
BOD, Soluble	110	3	6	1	x	1	–	4	3	1	x	2
COD, Total	1387	65	53	41	49	45	–	61	65	53	57	45
COD, Soluble	298	53	49	37	x	37	–	57	49	45	x	41
P, Total	39	x	x	16	x	14	–	x	x	15	x	14
N. Total	35	x	x	3.4	x	3.5	–	x	x	3.9	x	3.5
N, NH_3	33	x	x	.34	x	.32	–	x	x	.33	x	.35
N, NO_2	x	x	x	.099	x	x	x	x	x	.116	x	x
N, NO_3	x	x	✓	.37	x	x	x	x	x	.39	x	x
Fecal Coliform Cells/100 ml	x	x	x	52	13	42	x	x	x	66	210	42
Algae, No./100 cc	x	–	–	–	x	–	x	–	–	–	x	–

*In mg/1 unless otherwise specified.   1 mph = 1.609 kg/hr   1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	10/29/76						10/30/76					
Weather	Sunny						Rain (0.4")					
Air Temp.°C	-1						5					
Wind Direction	-						SSW					
Wind Speed, mph	Calm						5-10					
Elect. Power, kw/hr	180						170					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.176	x	x	0.031	x	x	.176	x	x	0.031	x	x
pH, Units	-	8.0	7.6	8.1	8.1	8.0	-	7.5	7.7	8.1	8.0	8.0
Temp.°C	-	9	7	8	9	9	-	9	8	8	8	8
DO	-	3.7	3.0	3.7	3.9	4.1	-	3.0	2.8	3.7	3.8	3.8
Alkalinity	-	165	162	172	x	174	-	152	165	171	x	172
SS, Total	-	12	181	2	16	20	-	18	24	5	22	14
SS, Volatile	-	6	39	1	5	4	-	16	6	3	8	8
BOD, Total	-	2	9	1	1	1	-	9	4	2	1	1
BOD, Soluble	-	1	6	1	x	1	-	5	2	1	x	1
COD, Total	-	61	143	49	57	65	-	90	69	49	61	53
COD, Soluble	-	53	49	44	x	49	-	65	65	37	x	44
P, Total	-	x	x	15	x	15	-	x	x	16	x	15
N. Total	-	x	x	4.0	x	3.2	-	x	x	3.1	x	3.0
N, NH_3	-	x	x	.22	x	.22	-	x	x	.26	x	.26
N, NO_2	x	x	x	.121	x	x	x	x	x	.113	x	x
N, NO_3	x	x	x	.53	x	x	x	x	x	.48	x	x
Fecal Coliform Cells/100 ml	x	x	x	20	25	25	x	x	x	37	1	390
Algae, No./100 cc	x	-	-	-	x	-	x	-	-	-	x	-

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	10/31/76											
Weather	Overcast											
Air Temp.°C	8											
Wind Direction	N											
Wind Speed, mph	10-15											
Elect. Power, kw/hr	85											
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.223	x	x	0.031	x	x						
pH, Units	-	7.6	7.8	8.1	8.1	8.2						
Temp.°C	-	10	10	9	9	10						
DO	-	3.2	3.4	3.8	3.8	4.0						
Alkalinity	-	156	160	167	x	170						
SS, Total	-	25	43	3	24	5						
SS, Volatile	-	23	17	2	5	3						
BOD, Total	-	20	3	1	2	2						
BOD, Soluble	-	14	1	1	x	1						
COD, Total	-	86	65	53	69	57						
COD, Soluble	-	78	61	49	x	53						
P, Total	-	x	x	16	x	16						
N. Total	-	x	x	3.5	x	3.6						
N, NH_3	-	x	x	.28	x	.27						
N, NO_2	x	x	x	.123	x	x						
N, NO_3	x	x	x	.53	x	x						
Fecal Coliform Cells/100 ml	x	x	x	62	8	10						
Algae, No./100 cc	x	-	-	-	x	-						

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	11/15/76						11/16/76					
Weather	Sunny						Sunny					
Air Temp.°C	-6						-3					
Wind Direction	Calm						W					
Wind Speed, mph	0-5						5-10					
Elect. Power, kw/hr	-						345					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.200	x	x	0.031	x	x	.180	x	x	0.031	x	x
pH, Units	7.8	8.2	8.2	8.1	8.0	8.0	7.1	8.2	8.2	8.0	8.1	8.1
Temp.°C	10	4	4	5	3	7	6	5	4	4	5	6
DO	1.0	3.9	4.2	4.2	3.9	4.0	0.3	4.3	3.8	4.2	3.7	4.2
Alkalinity	210	166	166	170	x	168	197	168	166	172	x	166
SS, Total	318	20	18	3	11	7	270	25	22	9	13	13
SS, Volatile	290	10	7	2	5	4	246	19	18	5	8	8
BOD, Total	390	7	3	3	1	1	540	7	3	4	2	1
BOD, Soluble	130	4	2	1	x	1	140	4	2	2	x	1
COD, Total	1030	61	41	53	45	37	1000	57	37	41	49	61
COD, Soluble	326	45	33	49	x	33	384	53	33	37	x	57
P, Total	46	x	x	17	x	17	57	x	x	17	x	16
N. Total	68	x	x	3.9	x	3.6	53	x	x	4.8	x	4.1
N, NH_3	39	x	x	.46	x	.51	30	x	x	.41	x	.48
N, NO_2	x	x	x	.52	x	x	x	x	x	.37	x	x
N, NO_3	x	x	x	1.0	x	x	x	x	x	.92	x	x
Fecal Coliform Cells/100 ml	x	x	x	390	12	5	x	x	x	<1	<1	<1
Algae, No./100 cc	x	25*	0.33*	0.20*	x	0.029*	x	-	-	-	x	-

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

*Multiply by 10^6

APPENDIX B (Continued)

Date	11/17/76						11/18/76					
Weather	Sunny						Sunny					
Air Temp.°C	0						-1					
Wind Direction	W						S					
Wind Speed, mph	15-20						15-20					
Elect. Power, kw/hr	410						190					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.176	x	x	0.031	x	x	.175	x	x	0.081	x	x
pH, Units	-	8.5	8.0	8.3	8.0	8.0	6.9	8.5	8.4	8.4	8.4	8.3
Temp.°C	-	4	5	4	5	6	6	5	5	5	6	6
DO	-	12.8	14.4	13.4	13.4	13.4	4.5	13.8	14.8	15.6	13.6	8.1
Alkalinity	-	158	164	168	x	160	250	166	168	172	x	170
SS, Total	-	37	22	12	25	18	1230	169	27	15	17	19
SS, Volatile	-	25	18	10	9	8	980	32	20	11	3	4
BOD, Total	-	6	4	5	1	4	840	12	3	3	1	2
BOD, Soluble	-	4	3	3	x	2	120	8	2	1	x	1
COD, Total	-	57	37	33	44	41	1432	108	40	80	40	48
COD, Soluble	-	44	33	29	x	33	288	52	40	44	x	44
P, Total	-	x	x	16	x	16	72	x	x	16	x	16
N. Total	-	x	x	.50	x	4.0	73	x	x	4.7	x	5.3
N, NH_3	-	x	x	.38	x	.47	49	x	x	.40	x	.41
N, NO_2	x	x	x	.22	x	x	x	x	x	.44	x	x
N, NO_3	x	x	x	.88	x	x	x	x	x	.98	x	x
Fecal Coliform Cells/100 ml	x	x	x	7	<1	<1	x	x	x	<1	<1	120
Algae, No./100 cc	x	-	-	-	x	-	x	-	-	-	x	-

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	11/19/76						11/20/76					
Weather	Sunny						Overcast					
Air Temp.°C	1						7					
Wind Direction	NW						NNW					
Wind Speed, mph	5-10						10-15					
Elect. Power, kw/hr	165						210					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.178	x	x	0.031	x	x	.180	x	x	0.031	x	x
pH, Units	7.7	8.5	8.4	8.4	8.5	8.3	7.4	7.9	8.4	8.4	8.4	8.2
Temp.°C	11	6	7	7	6	7	10	7	7	7	6	9
DO	–	14.2	14.0	15.8	13.4	15.4	–	13.2	13.2	14.4	13.4	14.4
Alkalinity	248	168	158	166	x	166	280	160	168	176	x	164
SS, Total	340	36	109	20	9	15	630	38	48	13	12	10
SS, Volatile	290	27	35	18	3	4	544	34	33	10	10	7
BOD, Total	396	4	9	1	1	1	671	13	5	1	1	1
BOD, Soluble	110	2	4	1	x	1	154	7	2	1	x	1
COD, Total	864	60	84	44	44	48	1456	96	80	80	44	44
COD, Soluble	268	44	48	40	x	44	332	88	76	48	x	44
P, Total	39	x	x	16	x	16	51	x	x	16	x	16
N. Total	73	x	x	4.8	x	4.3	120	x	x	3.9	x	4.3
N, NH_3	39	x	x	.36	x	.43	34	x	x	.34	x	.46
N, NO_2	x	x	x	.52	x	x	x	x	x	.46	x	x
N, NO_3	x	x	x	.95	x	x	x	x	x	.95	x	x
Fecal Coliform Cells/100 ml	x	x	x	2	<1	20	x	x	x	290	19	2
Algae, No./100 cc	x	–	–	–	x	–	x	–	–	–	x	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	11/21/76											
Weather	Overcast											
Air Temp.°C	2											
Wind Direction	WNW											
Wind Speed, mph	20-30											
Elect. Power, kw/hr	245											
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.184	x	x	0.031	x	x						
pH, Units	7.3	7.9	8.6	8.6	8.4	8.4						
Temp.°C	7	5	5	6	6	6						
DO	–	–	–	–	–	–						
Alkalinity	240	162	168	166	x	174						
SS, Total	576	44	57	17	17	14						
SS, Volatile	464	42	25	12	14	19						
BOD, Total	451	16	2	1	1	1						
BOD, Soluble	121	7	1	1	x	1						
COD, Total	1152	98	73	61	53	44						
COD, Soluble	164	78	65	49	x	40						
P, Total	48	x	x	17	x	16						
N. Total	55	x	x	4.3	x	3.7						
N, NH_3	31	x	x	.34	x	.47						
N, NO_2	x	x	x	.119	x	x						
N, NO_3	x	x	x	.98	x	x						
Fecal Coliform Cells/100 ml	x	x	x	19	8	3						
Algae, No./100 cc	x	–	–	–	x	–						

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	12/13/76						12/14/76					
Weather	Sunny						Sunny					
Air Temp.°C	-13						-4					
Wind Direction	W						S					
Wind Speed, mph	5-10						15-20					
Elect. Power, kw/hr	-						876					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.207	x	x	0.031	x	x	.201	x	x	0.031	x	x
pH, Units	7.3	-	8.7	8.6	8.6	8.4	7.3	8.4	-	8.6	8.6	8.4
Temp.°C	2	-	1	1	3	3	7	2	-	3	3	3
DO	0.9	-	15.6	18.4	14.8	14.2	0.8	14.6	-	17.2	14.4	13.4
Alkalinity	202	-	168	169	x	170	218	170	-	170	x	172
SS, Total	340	-	43	21	23	29	764	30	-	17	20	25
SS, Volatile	276	-	27	13	8	12	638	17	-	8	7	7
BOD, Total	390	-	8	3	1	4	530	7	-	4	1	2
BOD, Soluble	140	-	4	1	x	2	120	4	-	2	x	1
COD, Total	889	-	65	86	61	57	1297	65	-	45	61	57
COD, Soluble	32	-	57	82	x	49	282	57	-	41	x	53
P, Total	48	x	x	20	x	19	40	x	x	20	x	19
N. Total	40	x	x	5.0	x	4.9	48	x	x	5.0	x	4.7
N, NH_3	34	x	x	.48	x	.50	35	x	x	.46	x	.50
N, NO_2	x	x	x	.227	x	x	x	x	x	.185	x	x
N, NO_3	x	x	x	.68	x	x	x	x	x	.90	x	x
Fecal Coliform Cells/100 ml	x	x	x	35	<1	<1	x	x	x	7	<1	5
Algae, No./100 cc	x	-	3.9*	0.76*	x	0.36*	x	-	-	-	x	-

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

*Multiply by 10^6

APPENDIX B (Continued)

Date	12/15/76						12/16/76					
Weather	Sunny						Sunny					
Air Temp.°C	-4						-2					
Wind Direction	NW						WNW					
Wind Speed, mph	5-10						5-10					
Elect. Power, kw/hr	795						730					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.210	x	x	0.031	x	x	.189	x	x	0.031	x	x
pH, Units	7.2	8.3	8.3	8.7	8.6	8.5	7.3	8.4	8.4	8.7	8.7	8.6
Temp.°C	8	2	2	3	3	3	5	4	3	2	3	3
DO	0.4	14.8	15.0	13.6	14.2	14.2	0.4	14.8	15.0	13.6	14.2	13.8
Alkalinity	208	170	170	168	x	170	246	168	169	168	x	167
SS, Total	552	24	44	20	29	24	544	29	35	21	27	27
SS, Volatile	490	19	24	16	22	21	494	23	31	13	19	24
BOD, Total	490	10	10	6	2	5	590	9	11	3	2	3
BOD, Soluble	90	5	5	3	x	3	170	3	6	1	x	1
COD, Total	1142	94	90	65	49	57	1124	69	65	61	69	65
COD, Soluble	261	78	82	61	x	53	265	61	57	53	x	61
P, Total	33	x	x	21	x	19	42	x	x	20	x	20
N. Total	40	x	x	4.7	x	4.3	68	x	x	4.7	x	4.3
N, NH_3	35	x	x	.56	x	.51	39	x	x	.55	x	.52
N, NO_2	x	x	x	.105	x	x	x	x	x	.101	x	x
N, NO_3	x	x	x	.97	x	x	x	x	x	1.0	x	x
Fecal Coliform Cells/100 ml	x	x	x	11	<1	75	x	x	x	26	1	<1
Algae, No./100 cc	x	–	–	–	x	–	x	–	–	–	x	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	12/17/76						12/18/76					
Weather	Sunny						Sunny					
Air Temp.°C	0						2					
Wind Direction	W						NNW					
Wind Speed, mph	5-10						5-10					
Elect. Power, kw/hr	505						665					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.195	x	x	0.031	x	x	.204	x	x	0.031	x	x
pH, Units	7.0	8.3	8.3	8.8	8.7	8.6	7.3	8.4	8.4	8.8	8.6	8.6
Temp.°C	5	3	3	2	4	4	8	2	2	2	3	3
DO	0.8	14.4	14.2	13.8	13.8	13.8	0.4	15.0	15.4	15.0	14.4	14.2
Alkalinity	169	167	167	168	x	166	238	166	166	166	x	166
SS, Total	630	13	18	7	17	10	404	8	37	14	16	35
SS, Volatile	556	6	13	4	11	6	350	3	30	7	14	13
BOD, Total	714	10	8	5	2	3	561	9	10	6	1	3
BOD, Soluble	110	3	4	3	x	2	127	3	4	3	x	2
COD, Total	1160	81	89	78	61	65	1034	82	86	65	57	78
COD, Soluble	277	78	81	69	x	57	330	78	82	57	x	77
P, Total	31	x	x	20	x	19	40	x	x	19	x	18
N. Total	53	x	x	5.8	x	5.3	60	x	x	6.1	x	6.0
N, NH_3	23	x	x	.46	x	.47	35	x	x	.48	x	.48
N, NO_2	x	x	x	.073	x	x	x	x	x	.081	x	x
N, NO_3	x	x	x	1.0	x	x	x	x	x	.88	x	x
Fecal Coliform Cells/100 ml	x	x	x	5	<1	30	x	x	x	11	<1	4
Algae, No./100 cc	x	–	–	–	x	–	x	–	–	–	x	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	12/19/76											
Weather	Sunny											
Air Temp.°C	7											
Wind Direction	SSE											
Wind Speed, mph	0-5											
Elect. Power, kw/hr	-											
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.209	x	x	0.031	x	x						
pH, Units	7.3	8.4	8.5	8.9	8.7	8.6						
Temp.°C	10	4	5	3	5	6						
DO	0.6	14.4	13.2	14.2	14.6	13.4						
Alkalinity	246	160	164	170	x	166						
SS, Total	566	36	45	26	58	15						
SS, Volatile	482	25	33	20	28	8						
BOD, Total	603	10	10	6	2	3						
BOD, Soluble	127	3	3	2	x	2						
COD, Total	1160	78	65	69	57	65						
COD, Soluble	273	69	53	61	x	57						
P, Total	42	x	x	20	x	19						
N. Total	65	x	x	5.5	x	5.5						
N, NH_3	37	x	x	.46	x	.48						
N, NO_2	x	x	x	.077	x	x						
N, NO_3	x	x	x	.90	x	x						
Fecal Coliform Cells/100 ml	x	x	x	8	<1	5						
Algae, No./100 cc	x	-	-	-	x	-						

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	2/14/77						2/15/77					
Weather	snow						sunny					
Air Temp.°C	-2						-4					
Wind Direction	N						NE					
Wind Speed, mph	10-15						5-10					
Elect. Power, kw/hr	-						870					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.138	x	x	-	x	x	.143	x	x	-	x	x
pH, Units	7.5	7.4	-	7.9	7.9	7.9	7.5	7.5	-	7.9	7.9	7.8
Temp.°C	10	2	-	2	3	3	4	2	-	2	1	2
DO	10.4	15.0		15.6	13.6	13.8	4.0	15	-	16.4	15.2	15.6
Alkalinity	280	196	-	182	x	180	234	196	-	184	x	186
SS, Total	298	20	-	14	17	22	264	16	-	12	12	15
SS, Volatile	244	13	-	10	10	11	228	12	-	9	8	9
BOD, Total	370	10	-	10	4	6	510	12	-	8	1	5
BOD, Soluble	90	6	-	5	x	2	70	6	-	6	x	2
COD, Total	586	63	-	51	44	44	642	67	-	55	59	52
COD, Soluble	230	55	-	48	x	40	182	59	-	52	x	48
P, Total	48	x	x	31	x	29	34	x	x	30	x	29
N. Total	65	x	x	10	x	9	39	x	x	11	x	9.5
N, NH_3	43	x	x	3.0	x	2.7	26	x	x	4	x	3.9
N, NO_2	x	x	x	0.035	x	x	x	x	x	0.035	x	x
N, NO_3	x	x	x	1.1	x	x	x	x	x	1.1	x	x
Fecal Coliform Cells/100 ml	x	x	x	390	1	<1	x	x	x	390	<1	<1
Algae, No./100 cc	x	0.50✱	-	0.57✱	x	0.059✱	x	-	-	-	x	-

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

✱Multiply by 10^6

APPENDIX B (Continued)

Date	2/16/77						2/17/77					
Weather	SUNNY						OVERCAST					
Air Temp.°C	-11						-5					
Wind Direction	NW						SSE					
Wind Speed, mph	5-10						10-15					
Elect. Power, kw/hr	800						720					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.137	x	x	-	x	x	.145	x	x	-	x	x
pH, Units	7.5	7.5	-	7.9	7.9	7.8	7.6	7.5	-	7.9	8.0	7.9
Temp.°C	6	2	-	3	5	5	6	5	-	5	2	2
DO	5.3	16.2	-	16.0	14	14.6	4.0	14.2	-	17.4	15.8	15.6
Alkalinity	216	196	-	182	x	181	218	190	-	184	x	190
SS, Total	326	28	-	7	2	3	484	5	-	16	27	22
SS, Volatile	304	11	-	4	1	2	420	3	-	10	23	14
BOD, Total	410	12	-	9	1	6	330	11	-	10	1	1
BOD, Soluble	100	8	-	6	x	2	120	3	-	4	x	1
COD, Total	689	75	-	51	55	59	935	59	-	48	51	51
COD, Soluble	218	67	-	48	x	55	178	51	-	44	x	40
P, Total	37	x	x	32	x	32	38	x	x	31	x	30
N. Total	45	x	x	9.5	x	9.0	65	x	x	10	x	9.5
N, NH_3	24	x	x	4.5	x	4.5	28	x	x	5.0	x	4.6
N, NO_2	x	x	x	0.056	x	x	x	x	x	0.041	x	x
N, NO_3	x	x	x	0.75	x	x	x	x	x	0.70	x	x
Fecal Coliform Cells/100 ml	x	x	x	200	<1	19	x	x	x	490	<1	<1
Algae, No./100 cc	x	-	-	-	x	-	x	-	-	-	x	-

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	2/18/77						2/19/77					
Weather	overcast						Rain + snow					
Air Temp.°C	1						-1					
Wind Direction	nnw						nw					
Wind Speed, mph	5-10						10-15					
Elect. Power, kw/hr	790						780					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.122	x	x	-	x	x	.204	x	x	-	x	x
pH, Units	7.5	7.4	-	7.9	8.0	7.9	7.4	7.4	-	7.8	8.1	7.9
Temp.°C	7	4	-	3	3	3	7	1	-	2	2	2
DO	3.0	14.0	-	16.8	16.4	14.8	2.0	14.6	-	14.8	16.8	17.6
Alkalinity	230	198	-	174	x	184	206	194	-	182	x	184
SS, Total	510	12	-	5	32	34	404	23	-	11	38	10
SS, Volatile	442	6	-	3	10	10	340	5	-	8	12	6
BOD, Total	473	9	-	7	1	1	286	9	-	5	1	6
BOD, Soluble	88	3	-	2	x	0	77	6	-	3	x	2
COD, Total	1045	67	-	51	51	55	729	71	-	55	63	55
COD, Soluble	273	59	-	47	x	44	198	63	-	51	x	51
P, Total	46	x	x	35	x	34	37	x	x	32	x	31
N, Total	65	x	x	11	x	10	60	x	x	10	x	10
N, NH_3	24	x	x	4.6	x	4.4	29	x	x	4.8	x	4.6
N, NO_2	x	x	x	0.035	x	x	x	x	x	0.035	x	x
N, NO_3	x	x	x	1.0	x	x	x	x	x	1.08	x	x
Fecal Coliform Cells/100 ml	x	x	x	150	<1	<1	x	x	x	68	<1	<1
Algae, No./100 cc	x	-	-	-	x	-	x	-	-	-	x	-

*In mg/1 unless otherwise specified.   1 mph = 1.609 kg/hr   1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	2/20/77											
Weather	sunny											
Air Temp.°C	1											
Wind Direction	SSW											
Wind Speed, mph	5-10											
Elect. Power, kw/hr	745											
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.181	x	x	–	x	x						
pH, Units	7.0	7.0	-	7.9	8.1	7.8						
Temp.°C	6	3	-	2	2	3						
DO	4.0	14.6	-	15.2	14.4	14.8						
Alkalinity	228	194	-	180	x	182						
SS, Total	426	14	-	14	18	27						
SS, Volatile	362	8	-	7	9	21						
BOD, Total	385	9	-	6	1	1						
BOD, Soluble	132	5	-	3	x	1						
COD, Total	824	75	-	63	71	67						
COD, Soluble	214	67	-	59	x	63						
P, Total	38	x	x	32	x	31						
N. Total	55	x	x	11	x	10						
N, NH_3	31	x	x	5.0	x	4.8						
N, NO_2	x	x	x	0.038	x	x						
N, NO_3	x	x	x	1.04	x	x						
Fecal Coliform Cells/100 ml	x	x	x	78	<1	<1						
Algae, No./100 cc	x	–	–	–	x	–						

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	3/1/77						3/2/77					
Weather	Sunny						Overcast					
Air Temp.°C	-4						-3					
Wind Direction	SSW						SSW					
Wind Speed, mph	5-10						10-15					
Elect. Power, kw/hr							625					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.184	x	x	–	x	x	.180	x	x	–	x	x
pH, Units	7.7	7.7	8.2	8.2	8.1	7.9	7.5	7.7	8.3	8.3	8.2	8.1
Temp.°C	5	3	3	3	4	4	5	3	3	4	3	4
DO	6.0	13.6	14.0	14.4	15.2	14.4	5.6	14.8	14.4	14.2	14.0	14.6
Alkalinity	232	196	164	162	x	162	228	176	163	161	x	164
SS, Total	65	10	43	13	5	22	302	5	10	8	8	21
SS, Volatile	54	6	39	7	3	13	276	3	7	5	4	12
BOD, Total	200	10	12	9	1	1	200	9	10	11	1	1
BOD, Soluble	80	2	3	2	x	1	50	3	4	3	x	1
COD, Total	296	72	68	68	76	64	632	68	64	60	66	60
COD, Soluble	188	64	56	60	x	56	176	64	60	60	x	56
P, Total	29	x	x	30	x	28	26	x	x	30	x	29
N. Total	48	x	x	11	x	11	45	x	x	12	x	12
N, NH_3	25	x	x	5.7	x	5.3	36	x	x	6.4	x	5.8
N, NO_2	x	x	x	.053	x	x	x	x	x	.050	x	x
N, NO_3	x	x	x	.85	x	x	x	x	x	.82	x	x
Fecal Coliform Cells/100 ml	x	x	x	<1	<1	<1	x	x	x	<1	<1	<1
Algae, No./100 cc	x	–	–	–	x	–	x	–	–	–	x	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	3/3/77						3/4/77					
Weather	Rain (0.3")						Overcast					
Air Temp.°C	6						6					
Wind Direction	S						SW					
Wind Speed, mph	10-15						15-20					
Elect. Power, kw/hr	642						593					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.189	x	x	-	x	x	.218	x	x	x	x	x
pH, Units	7.3	7.8	8.2	8.2	8.1	8.1	7.2	7.7	8.2	8.2	8.1	7.9
Temp.°C	9	4	4	4	4	5	8	5	5	5	4	5
DO	0.8	13.6	13.4	13.8	13.8	14.0	0.5	14.8	14.2	14.0	13.8	13.7
Alkalinity	206	176	164	160	x	160	204	178	168	166	x	166
SS, Total	328	18	18	19	8	20	396	24	18	18	14	25
SS, Volatile	292	10	8	13	5	6	336	10	11	10	5	10
BOD, Total	310	11	12	12	1	1	280	10	10	11	1	1
BOD, Soluble	90	4	4	3	x	1	44	5	6	7	x	1
COD, Total	584	68	54	64	60	52	620	60	58	56	64	48
COD, Soluble	136	64	52	64	x	48	208	56	56	52	x	44
P, Total	28	x	x	30	x	29	31	x	x	30	x	28
N. Total	48	x	x	13	x	13	48	x	x	13	x	13
N, NH_3	21	x	x	5.9	x	5.5	20	x	x	5.9	x	5.3
N, NO_2	x	x	x	.054	x	x	x	x	x	.056	x	x
N, NO_3	x	x	x	.88	x	x	x	x	x	.85	x	x
Fecal Coliform Cells/100 ml	x	x	x	<1	<1	<1	x	x	x	5	<1	11
Algae, No./100 cc	x	-	-	-	x	-	x	-	-	-	x	-

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	3/5/77						3/6/77					
Weather	Overcast						Sunny					
Air Temp.°C	1						1					
Wind Direction	W						W					
Wind Speed, mph	5-10						5-10					
Elect. Power, kw/hr	605						452					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.171	x	x	-	x	x	.192	x	x	-	x	x
pH, Units	7.4	7.8	8.3	8.2	8.1	8.0	7.5	7.9	8.4	8.3	8.3	8.0
Temp.°C	9	5	5	5	5	5	7	5	5	5	5	5
DO	0.8	14.2	14.4	15.0	14.2	14.4	0.7	14.2	14.0	15.0	14.4	13.8
Alkalinity	228	176	166	166	x	162	232	180	168	166	x	164
SS, Total	311	26	20	18	18	17	484	24	28	20	18	18
SS, Volatile	271	10	10	14	9	9	422	8	17	12	7	9
BOD, Total	210	10	11	10	1	1	290	10	11	10	2	1
BOD, Soluble	40	5	5	5	x	1	60	6	5	4	x	1
COD, Total	656	68	62	58	90	66	712	62	56	52	60	68
COD, Soluble	196	60	60	56	x	64	172	48	44	40	x	48
P, Total	30	x	x	30	x	30	34	x	x	30	x	30
N. Total	55	x	x	13	x	13	60	x	x	13	x	12
N, NH_3	22	x	x	5.9	x	5.7	29	x	x	5.7	x	5.5
N, NO_2	x	x	x	.053	x	x	x	x	x	.056	x	x
N, NO_3	x	x	x	.90	x	x	x	x	x	.85	x	x
Fecal Coliform Cells/100 ml	x	x	x	8	<1	14	x	x		-	<1	<1
Algae, No./100 cc	x	-	-	-	x	-	x	-	-	-	x	-

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	3/7/77						3/8/77					
Weather	Sunny						Sunny					
Air Temp.°C	0						14					
Wind Direction	WSW						W					
Wind Speed, mph	5-10						5-10					
Elect. Power, kw/hr	306						183					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.164	x	x	-	x	x	.189	x	x	-	x	x
pH, Units	7.6	8.0	8.3	8.4	8.2	8.1	7.4	8.5	8.5	8.4	8.3	8.2
Temp.°C	6	5	5	5	5	5	9	6	6	6	7	7
DO	0.6	14.4	13.6	14.4	14.8	14.0	011	13.6	13.4	13.0	14.8	15.4
Alkalinity	232	178	168	166	x	164	236	178	166	158	x	162
SS, Total	384	20	22	20	16	24	366	16	24	19	14	18
SS, Volatile	321	12	14	10	7	14	308	9	18	12	6	12
BOD, Total	270	11	11	12	2	1	300	12	12	14	1	1
BOD, Soluble	60	7	6	8	x	1	100	8	9	10	x	1
COD, Total	779	63	61	69	73	65	787	69	67	65	78	61
COD, Soluble	192	61	57	53	x	61	208	53	41	57	x	57
P, Total	42	x	x	30	x	30	43	x	x	31	x	29
N. Total	53	x	x	13	x	12	67	x	x	9.0	x	7.3
N, NH_3	23	x	x	5.7		5.5	27	x	x	5.9	x	5.9
N, NO_2	x	x	x	.056	x	x	x	x	x	.053	x	x
N, NO_3	x	x	x	.78	x	x	x	x	x	.62	x	x
Fecal Coliform Cells/100 ml	x	x	x	22	<1	3	x	x	x	<1	<1	<1
Algae, No./100 cc	x	0.2✱	0.39✱	0.59✱	x	0.03 ✱	x	-	-	-	x	-

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

✱Multiply by 10^6

APPENDIX B (Continued)

Date	3/9/77						3/10/77					
Weather	Sunny						Sunny					
Air Temp.°C	13						9					
Wind Direction	S						S					
Wind Speed, mph	10-15						5-10					
Elect. Power, kw/hr	108						167					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.178	x	x	–	x	x	.176	x	x	–	x	x
pH, Units	7.9	8.1	8.5	8.5	8.3	8.2	7.5	8.1	8.5	8.4	8.2	8.2
Temp.°C	11	8	8	8	9	8	10	9	9	9	9	9
DO	2.2	12.2	12.0	11.8	11.2	11.6	0.4	11.2	11.2	10.6	10.0	11.0
Alkalinity					x		244	163	164	165	x	164
SS, Total							336	29	34	27	18	12
SS, Volatile							292	21	25	19	9	8
BOD, Total							280	10	12	15	1	1
BOD, Soluble					x		110	7	10	12	x	1
COD, Total							673	71	65	69	73	75
COD, Soluble					x		180	61	57	67	x	65
P, Total		x	x		x		29	x	x	34	x	30
N. Total		x	x		x		65	x	x	16	x	4.5
N, NH_3		x	x		x		25	x	x	7.4	x	5.8
N, NO_2	x	x	x		x	x	x	x	x	.089	x	x
N, NO_3	x	x	x		x	x	x	x	x	1.16	x	x
Fecal Coliform Cells/100 ml	x	x	x				x	x	x	15	<1	<1
Algae, No./100 cc	x	–	–		x	–	x	–	–	–	x	–

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	3/11/77						3/12/77					
Weather	Overcast						Rain					
Air Temp.°C	15						12					
Wind Direction	NE						S					
Wind Speed, mph	10-15						5-10					
Elect. Power, kw/hr	128						230					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.185	x	x	—	x	x	.255	x	x	-	x	x
pH, Units	7.3	8.0	8.2	8.2	8.1	8.0	7.5	8.0	8.2	8.2	8.6	8.1
Temp.°C	12	9	10	9	10	10	11	11	11	11	11	11
DO	0.3	11.4	11.5	11.6	11.0	11.0	4.0	11.0	10.6	11.0	10.2	10.8
Alkalinity	246	176	166	166	x	162	168	172	164	162	x	160
SS, Total	514	45	39	30	16	29	660	50	39	43	19	23
SS, Volatile	460	33	29	24	8	18	488	38	27	31	7	17
BOD, Total	517	13	21	11	21	13	352	43	10	31	8	11
BOD, Soluble	121	9	17	7	x	8	44	31	6	27	x	8
COD, Total	971	67	57	65	73	69	873	69	61	59	65	65
COD, Soluble	253	59	57	53	x	61	269	61	53	57	x	57
P, Total	48	x	x	30	x	24	30	x	x	31	x	29
N. Total	60	x	x	13	x	14	45	x	x	13	x	13
N, NH_3	29	x	x	6.5	x	5.7	13	x	x	6.1	x	5.7
N, NO_2	x	x	x	.085	x	x	x	x	x	.081	x	x
N, NO_3	x	x	x	1.12	x	x	x	x	x	1.12	x	x
Fecal Coliform Cells/100 ml	x	x	x	2	2	26	x	x	x	26	<1	12
Algae, No./100 cc	x	—	-	—	x	-	x	—	-	-	x	—

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	3/13/77											
Weather	Rain											
Air Temp.°C	8											
Wind Direction	SSW											
Wind Speed, mph	10-15											
Elect. Power, kw/hr	297											
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.232	x	x	–	x	x						
pH, Units	7.4	8.0	8.2	8.2	8.1	7.9						
Temp.°C	10	10	10	10	10	10						
DO	4.6	11.0	10.8	10.8	11.2	10.2						
Alkalinity	202	176	164	160	x	158						
SS, Total	168	33	31	26	25	23						
SS, Volatile	125	23	25	20	9	11						
BOD, Total	209	10	11	18	12	18						
BOD, Soluble	55	6	8	9	x	9						
COD, Total	347	78	86	73	69	65						
COD, Soluble	81	73	69	65	x	57						
P, Total	16	x	x	31	x	30						
N. Total	35	x	x	17	x	16						
N, NH_3	14	x	x	6.5	x	5.7						
N, NO_2	x	x	x	.089	x	x						
N, NO_3	x	x	x	1.10	x	x						
Fecal Coliform Cells/100 ml	x	x	x	16	-	4						
Algae, No./100 cc	x	–	–	–	x	–						

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	3/14/77						3/15/77					
Weather	Sunny						Sunny					
Air Temp.°C	8						16					
Wind Direction	SSE						WNW					
Wind Speed, mph	5-10						15-20					
Elect. Power, kw/hr	238						162					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.200	x	x		x	x	.219	x	x		x	x
pH, Units	7.4	8.2	8.3	8.2	8.1	8.0						
Temp.°C	9	10	10	10	10	10						
DO	3.4	11.4	11.0	11.0	11.0	11.0						
Alkalinity	210	174	164	160	x	160					x	
SS, Total	255	34	33	76	99	40						
SS, Volatile	213	23	26	20	24	18						
BOD, Total	320	30	29	18	12	28						
BOD, Soluble	120	21	17	9	x	9					x	
COD, Total	342	72	75	62	58	60						
COD, Soluble	145	65	67	44	x	51					x	
P, Total	22	x	x	32	x	31		x	x		x	
N. Total	45	x	x	14	x	15		x	x		x	
N, NH_3	14	x	x	6.0	x	5.3		x	x		x	
N, NO_2	x	x	x	.097	x	x	x	x	x		x	x
N, NO_3	x	x	x	1.1	x	x	x	x	x		x	x
Fecal Coliform Cells/100 ml	x	x	x	40	<1	<1	x	x	x			
Algae, No./100 cc	x	1.6✱	2.5✱	2.7✱	x	0.98✱	x				x	

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

✱Multiply by 10^6

APPENDIX B (Continued)

Date	3/16/77						3/17/77					
Weather	Sunny						Overcast					
Air Temp.°C	5						7					
Wind Direction	W						E					
Wind Speed, mph	5-10						5-10					
Elect. Power, kw/hr	163						173					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.187	x	x		x	x	.208	x	x		x	x
pH, Units							7.5	8.3	8.5	8.5	8.3	8.2
Temp.°C							10	11	11	11	10	10
DO							2.2	11.4	11.0	11.0	11.2	11.0
Alkalinity					x		223	175	166	164	x	160
SS, Total							710	29	38	27	19	23
SS, Volatile							120	21	28	22	8	12
BOD, Total							620	15	18	15	16	12
BOD, Soluble					x		140	10	10	8	x	7
COD, Total							1388	64	89	72	68	167
COD, Soluble					x		350	53	71	61	x	58
P, Total		x	x		x		43	x	x	34	x	33
N. Total		x	x		x		45	x	x	18	x	13
N, NH $_3$		x	x		x		14	x	x	6.4	x	5.8
N, NO $_2$	x	x	x		x	x	x	x	x	.091	x	x
N, NO $_3$	x	x	x		x	x	x	x	x	1.12	x	x
Fecal Coliform Cells/100 ml	x	x	x				x	x	x	38	<1	<1
Algae, No./100 cc	x				x		x				x	

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	3/18/77						3/19/77					
Weather	Rain (1.3")						Overcast					
Air Temp.°C	6						6					
Wind Direction	NW						S					
Wind Speed, mph	30-40						5-10					
Elect. Power, kw/hr	295						625					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.275	x	x		x	x	.260	x	x		x	x
pH, Units	7.3	8.1	8.4	8.3	8.2	8.1	7.3	8.3	8.2	8.4	8.3	8.3
Temp.°C	10	10	9	9	9	9	7	9	9	9	7	7
DO	3.5	11.2	11.6	11.2	11.2	11.0	3.6	11.4	11.6	11.4	12.0	12.0
Alkalinity	248	178	168	160	x	164	240	176	166	162	x	160
SS, Total	614	34	36	24	20	27	650	39	42	26	18	28
SS, Volatile	135	27	26	18	10	15	180	24	31	14	11	16
BOD, Total	455	11	20	17	14	14	350	15	22	19	16	14
BOD, Soluble	150	7	12	11	x	9	130	9	12	12	x	8
COD, Total	875	79	85	68	71	74	710	68	88	70	65	64
COD, Soluble	266	61	64	56	x	65	155	53	71	64	x	48
P, Total	41	x	x	34	x	32	25	x	x	39	x	32
N. Total	48	x	x	18	x	15	48	x	x	18	x	14
N, NH_3	14	x	x	6.8	x	5.7	12	x	x	5.2	x	4.5
N, NO_2	x	x	x	.093	x	x	x	x	x	.099	x	x
N, NO_3	x	x	x	1.10	x	x	x	x	x	1.22	x	x
Fecal Coliform Cells/100 ml	x	x	x	14	<1	<1	x	x	x	22	2	<1
Algae, No./100 cc	x				x		x				x	

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	3/20/77											
Weather	Overcast											
Air Temp.°C	4											
Wind Direction	E											
Wind Speed, mph	5-10											
Elect. Power, kw/hr	724											
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.255	x	x		x	x						
pH, Units	7.4	8.3	8.4	8.4	8.3	8.3						
Temp.°C	7	7	7	7	7	7						
DO	3.5	11.8	12.6	12.2	12.2	11.8						
Alkalinity	256	176	164	168	x	162						
SS, Total	455	38	36	24	27	32						
SS, Volatile	210	23	21	18	14	12						
BOD, Total	225	28	27	21	17	17						
BOD, Soluble	110	19	10	14	x	7						
COD, Total	360	79	88	65	56	68						
COD, Soluble	170	65	64	48	x	57						
P, Total	27	x	x	38	x	34						
N. Total	47	x	x	16	x	13						
N, NH_3	12	x	x	6.2	x	5						
N, NO_2	x	x	x	.118	x	x						
N, NO_3	x	x	x	1.21	x	x						
Fecal Coliform Cells/100 ml	x	x	x	590	<1	<1						
Algae, No./100 cc	x				x							

*In mg/1 unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	3/21/77						3/22/77					
Weather	Overcast						Sunny					
Air Temp.°C	6						-2					
Wind Direction	–						–					
Wind Speed, mph	–						–					
Elect. Power, kw/hr	617						427					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.227	x	x	–	x	x	.265	x	x	–	x	x
pH, Units	7.3	8.4	8.6	8.5	8.4	8.2						
Temp.°C	9	9	8	8	8	9						
DO	1.6	11.4	12.6	12.6	12.2	11.4						
Alkalinity	200	170	168	168	x	156					x	
SS, Total	261	28	38	27	75	37						
SS, Volatile	188	20	29	19	31	21						
BOD, Total	276	37	34	20	16	31						
BOD, Soluble	108	24	14	7	x	11					x	
COD, Total	311	68	79	60	52	65						
COD, Soluble	150	51	62	54	x	48					x	
P, Total	24	x	x	40	x	36		x	x		x	
N. Total	46	x	x	17	x	14		x	x		x	
N, NH_3	13	x	x	6.8	x	6.2		x	x		x	
N, NO_2	x	x	x	.21	x	x	x	x	x		x	x
N, NO_3	x	x	x	1.44	x	x	x	x	x		x	x
Fecal Coliform Cells/100 ml	x	x	x	58	<1	<1	x	x	x			
Algae, No./100 cc	x				x		x				x	

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	3/23/77						3/24/77					
Weather	Sunny						Sunny					
Air Temp.°C	5						4					
Wind Direction	NW						E					
Wind Speed, mph	10-15						10-15					
Elect. Power, kw/hr	-						-					
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.273	x	x	-	x	x	.270	x	x	0.06	x	x
pH, Units	7.2	8.4	8.7	8.6	8.6	8.4	7.3	8.5	8.3	8.6	8.4	8.2
Temp.°C	9	8	8	8	8	8	7	8	7	8	7	7
DO	2.2	12.6	12.6	12.2	12.0	12.2	2.4	13.1	12.2	12.2	11.9	12.0
Alkalinity	242	168	166	164	x	162	238	168	168	166	x	160
SS, Total	304	30	36	24	32	27	215	27	50	55	26	20
SS, Volatile	287	19	21	15	22	14	180	21	44	38	16	9
BOD, Total	260	11	18	21	12	4	210	29	35	19	7	15
BOD, Soluble	100	8	11	14	x	1	18	19	11	10	x	7
COD, Total	477	69	65	67	70	68	390	82	95	82	69	71
COD, Soluble	135	60	52	58	x	57	97	53	77	51	x	59
P, Total	25	x	x	36	x	34	26	x	x	3.8	x	34
N. Total	48	x	x	15	x	12	49	x	x	15	x	13
N, NH_3	14	x	x	5.9	x	4.9	13	x	x	5.5	x	4.7
N, NO_2	x	x	x	.218	x	x	x	x	x	.255	x	x
N, NO_3	x	x	x	1.22	x	x	x	x	x	1.64	x	x
Fecal Coliform Cells/100 ml	x	x	x	120	<1	<1	x	x	x	54	—	<1
Algae, No./100 cc	x				x		x				x	

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	3/25/77						3/26/77					
Weather	Sunny											
Air Temp.°C	7											
Wind Direction	E											
Wind Speed, mph	5-10											
Elect. Power, kw/hr	210											
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.237	x	x	—	x	x	.240	x	x	—	x	x
pH, Units	7.3	8.6	8.4	8.7	8.5	8.4						
Temp.°C	9	9	8	8	10	10						
DO	2.2	11.4	12.4	12.2	11.2	11.2						
Alkalinity	221	173	171	161	x	157					x	
SS, Total	250	33	48	47	19	21						
SS, Volatile	228	26	35	29	17	11						
BOD, Total	170	23	20	16	6	10						
BOD, Soluble	20	16	12	9	x	6					x	
COD, Total	467	91	101	75	95	75						
COD, Soluble	63	48	51	40	x	51					x	
P, Total	26	x	x	40	x	35		x	x		x	
N. Total	53	x	x	16	x	14		x	x		x	
N, NH_3	11	x	x	5.3	x	4.7		x	x		x	
N, NO_2	x	x	x	.332	x	x	x	x	x		x	x
N, NO_3	x	x	x	1.83	x	x	x	x	x		x	x
Fecal Coliform Cells/100 ml	x	x	x	44	<1	<1	x	x	x			
Algae, No./100 cc	x				x		x				x	

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	3/27/77											
Weather												
Air Temp.°C												
Wind Direction												
Wind Speed, mph												
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.244	x	x	—	x	x						
pH, Units												
Temp.°C												
DO												
Alkalinity					x							
SS, Total												
SS, Volatile												
BOD, Total												
BOD, Soluble					x							
COD, Total												
COD, Soluble					x							
P, Total		x	x		x							
N. Total		x	x		x							
N, NH_3		x	x		x							
N, NO_2	x	x	x		x	x						
N, NO_3	x	x	x		x	x						
Fecal Coliform Cells/100 ml	x	x	x									
Algae, No./100 cc	x				x							

*In mg/l unless otherwise specified.   1 mph = 1.609 kg/hr   1 mgd = 3785 m^3/d

APPENDIX B (Continued)

Date	3/28/77						3/29/77					
Weather	Rain (1.133")						Sunny					
Air Temp.°C	16						16					
Wind Direction	SSE						-					
Wind Speed, mph	20-40						-					
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.369	x	x	–	x	x	–	x	x	–	x	x
pH, Units	–	–	-	8.3	7.6	8.0	7.2	8.3	8.2	8.3	8.4	8.3
Temp.°C	–	13	13	14	14	13	14	13	13	14	13	13
DO	–	-	9.8	10.0	9.8	10.2	4.8	10.4	9.8	10.2	10.2	10.2
Alkalinity	162	167	172	158	x	145	168	172	166	156	x	158
SS, Total	1296	106	120	85	70	47	324	88	74	40	116	108
SS, Volatile	872	37	49	48	44	21	174	64	42	14	28	40
BOD, Total	480	18	19	18	1	6	140	19	18	2	1	18
BOD, Soluble	120	9	12	13	x	2	60	10	8	1	x	9
COD, Total	1346	103	135	127	135	67	455	99	103	95	107	103
COD, Soluble	171	71	55	59	x	51	79	51	55	48	x	63
P, Total	38	x	x	29	x	28	18	x	x	37	x	32
N. Total	45	x	x	17	x	14	19	x	x	14	x	14
N, NH_3	7.5	x	x	5.8	x	5.2	7.3	x	x	6.1		
N, NO_2	x	x	x	.385	x	x	x	x	x	.407	x	x
N, NO_3	x	x	x	1.9	x	x	x	x	x	1.04	x	x
Fecal Coliform Cells/100 ml	x	x	x	56	<1	<1	x	x	x	86	<1	4
Algae, No./100 cc	x	8.0✱	33✱	55✱	x	4.7✱	x	–	–	–	x	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

✱Multiply by 10^6

APPENDIX B (Continued)

Date	3/30/77						3/31/77					
Weather							Overcast					
Air Temp.°C							3					
Wind Direction							WNW					
Wind Speed, mph							10-15					
Elect. Power, kw/hr												
Parameters*	Inf	Pd.1	Pd.2	Pd.3	CC	Eff	Inf	Pd.1	Pd.2	Pd.3	CC	Eff
Flow, mgd	.366	x	x	—	x	✓	.307	x	x	—	x	x
pH, Units							7.3	8.4	8.2	8.1	8.3	8.4
Temp.°C							9	11	10	11	11	11
DO							4.5	11.2	11.2	10.6	11.6	11.2
Alkalinity					x		178	168	168	152	x	156
SS, Total							358	91	187	83	38	43
SS, Volatile							242	23	36	18	24	12
BOD, Total							170	30	30	21	22	10
BOD, Soluble					x		60	20	19	16	x	4
COD, Total							531	107	83	85	111	87
COD, Soluble					x		40	55	51	48	x	44
P, Total		x	x		x		15	x	x	32	x	31
N. Total		x	x		x		33	x	x	19	x	14
N, NH_3		✓	x		x		9.5	x	x	6.1	x	6.5
N, NO_2	x	x	x		x	x	x	x	x	.682	x	x
N, NO_3	x	x	x		x	x	x	x	x	1.15	x	x
Fecal Coliform Cells/100 ml	x	x	x				x	x	x	2400	88	<1
Algae, No./100 cc	x	–	–	–	x	–	x	–	–	—	x	–

*In mg/l unless otherwise specified. 1 mph = 1.609 kg/hr 1 mgd = 3785 m^3/d

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